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THE OPERATIVE TREATMENT OF HERNIA IN CHILDREN, WITH A REPORT OF ONE HUNDRED AND THIRTY-THREE CASES.

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I began operating upon hernia in children in December, 1891, just three years ago. Since that time I have performed the operation for radical cure in 133 cases under fourteen years of age. An analysis of these cases, the methods employed, and the results obtained, may be of help in determining the question as to the justifiability and value of operative procedures.

We all know in a general way that, until the more recent methods of Macewen, Championnière, Bassini, and Halsted, the results were failures in so large a proportion of cases that all operations came to be looked upon with distrust by the profession at large. That distrust has by no means disappeared, even yet, and if we can show that it rests rather upon tradition than upon facts as they exist at present, it is our duty to do all in our power to dispel it.

Before taking up the subject of the operative treatment of hernia in children it is necessary to refer briefly to the results of mechanical treatment. Some surgeons high in authority have made the statement that all cases of hernia in children can be cured by trusses. Such statements as this, though undoubtedly made in good faith, show that their authors have not carefully followed up any very large number of cases. Our knowledge of the value and limitations of the mechanical

[1] Read before the College of Physicians of Philadelphia, December 15, 1894.

treatment of hernia has been greatly increased by the recent publication of Macready's *Treatise on Ruptures*. It is by far the ablest and most scientific work on hernia yet published, and its conclusions are based on the records of the London Truss Society, the largest hernia clinic in the world.

As to the question of cure from mechanical treatment in children, Macready says, "We can only speak of probabilities; it may be said that many boys are cured, but then the prospect is more favorable for girls; that the younger the patient the more probable the cure; those with femoral hernia there is little chance of being able to dispense with a truss, and that after thirty years of age cure is not to be expected in either sex or in either kind of hernia." The London Truss Society records show 33 per cent. of children ruptured go beyond the age of eleven years uncured, and the real number Macready considers much larger.

The records of the Hospital for Ruptured and Crippled bear out these statements. Having established this point, that certain cases in children do need other than mechanical treatment, it remains to determine whether or not these cases can be cured by operation, without subjecting them to any considerable risk.

In an earlier paper on the "Operative Treatment of Hernia in Children" (*Medical Record*, July 1, 1893) I stated as my belief "that operations for the cure of hernia should stand or fall according as they fulfilled two conditions of all operations (except emergency): first a mortality either *nil* or not greater than that associated with the condition prior to operation; second, a reasonable hope of success either as regards cure or relief." The older and less perfect methods failed to fulfil both of these conditions, but the same cannot be said of the methods that we employ to-day.

In no department of surgery is there need of wider experience and sounder judgment than in the management of hernia. The indications and contra-indications for operation should be thoroughly understood and carefully considered in every case. The indications for operation in children, as they appear to me, have already been outlined (*loc. cit.*) as follows:

1. Cases of adherent omentum (rare in children).
2. Cases complicated with reducible hydrocele.
3. Cases irreducible or strangulated.
4. Cases unable to obtain the care requisite to successful mechanical treatment.
5. Cases where mechanical treatment has been faithfully tried for a number of years without benefit.

The large majority of the cases that I have operated upon have belonged to the last two classes, although the other three have all been represented by a considerable number of cases.

METHODS EMPLOYED. Of the total 133 cases, 5 were femoral, 4 umbilical and ventral, and the remaining 124 inguinal. (10 females and 114 males.)

METHODS OF OPERATION AND TECHNIQUE. 1. Ligation of the sac and suture of the canal, without transplanting the cord, were the method employed in ten cases. The immediate and final results were as follows:

(*a*) *Catgut.* In two cases the buried sutures were of simple non-chromicised catgut: of these, one relapsed in four months, although a truss was worn after operation; the second case is well three years after operation.

(*b*) *Silk.* In one case silk was used for the buried sutures. This case healed primarily, but soon after leaving the hospital two small sinuses appeared in the cicatrix and refused to heal until the silk suture had been extruded. Relapse occurred in three months in spite of the constant support of a truss.

(*c*) *Chromicised catgut.* This was used for buried sutures in four cases: of these, two are perfectly sound two years and nine months after operation; a third, two years and ten months; and a fourth, two years and eleven months.

(*d*) *Kangaroo-tendon* was employed in three cases: of these, one is well, without recurrence, two years and five months after operation; a second, eight months; and the third was not traced.

All of these ten cases healed primarily. Of the nine cases traced, seven are well without recurrence at present, and of these, six have gone nearly three years. The two relapses were due, one to the use of catgut, and the other to silk, the objections to which will be dealt with later.

2. Bassini's method, with the substitution of kangaroo-tendon for silk in the buried sutures, was employed in *one hundred and fourteen* cases. The tendon-sutures were actually employed in but one hundred and twelve cases, silk having been used in one case and chromicised catgut in one. The silk sutures were used in my first Bassini operation done in children. The wound suppurated very badly, the sutures sloughed out, and relapse followed, as a natural result, three months later.

The case in which chromicised catgut was used was a recent case, and the catgut was used because I had no tendon at hand. Primary union occurred, but three weeks after the operation two small sinuses appeared, and I do not expect them to close until the sutures are either thrown off or absorbed.

Having now eliminated these twelve cases in which there was more or less variation in technique, we have left one hundred and twelve cases not only operated upon by a single method, but in which the same technique was observed in every detail. It is only by an analysis of cases operated upon under similar conditions that conclusions of value can be drawn.

Although Bassini's elaborate paper, describing in detail his operation and reporting two hundred and sixty-two cases, was published four years ago (*Archiv f. klin. Chir.*, 1890), there have been so few accurate descriptions of the operation in English that the technique is not generally understood, and I may be pardoned for briefly outlining its essential features:

1. The *external incision* begins at a point nearly or quite on a level with the anterior superior spine, continues obliquely downward parallel with and about one-half an inch internal to Poupart's ligament, and ends at the centre of the external ring.

2. The incision is rapidly carried down until the aponeurosis of the external oblique is freely exposed for a distance of two and one-half to three inches; a director is then passed through the external ring just beneath the aponeurosis, and the aponeurosis is divided well above, *e. g.*, one half to one inch above the internal ring.

3. The cut edges of the aponeurosis are held up with forceps and dissected free from the underlying muscles as far as the edge of the rectus internally and externally until the shelving portion of Poupart's ligament has been clearly exposed.

4. The sac and cord are then isolated *en masse*, and this is best accomplished with the fingers and blunt-pointed curved scissors. If the peritoneal layer of the sac is first reached, the dissection is easy, rapid, and bloodless.

5. The cord and vessels of cord are now separated from the sac, and this, too, is best done with the fingers. The separation is carried high up within the internal ring, and the sac is ligated or sutured at the place where it merges into the general peritoneal cavity.

6. The cord is held up and the edges of the aponeurosis rolled back, while from three to five buried sutures are introduced beneath the cord. These are best introduced from within outward, and should include the internal oblique and transversalis muscles, the transversalis fascia (and sometimes the edge of the rectus) on the inner side, and the deep shelving portion of Poupart's ligament on the outer side. The lowermost suture should embrace the conjoined tendon.

7. The cord is now replaced and the cut aponeurosis is closed over it by means of a continuous suture extending as near the pubis as possible without causing undue constriction of the cord.

8. Closing the skin-wound with interrupted sutures without drainage completes the operation.

Although this may sound like a somewhat complicated operation, and in fact it has been objected to for this reason by many surgeons, in actual practice it is simple and can be quickly performed. I have done the entire operation in fifteen minutes, and in one day I performed five operations upon four subjects in two hours and ten minutes.

I have endeavored to follow the technique laid down by Bassini as carefully as possible with the single, and, as I believe, important modification of substituting kangaroo-tendon for silk in the buried sutures.

The character of the *suture-material* I believe to be one of the most important factors in the success of any operation for the radical cure of hernia, and I do not think sufficient credit has been accorded Dr. H. O. Marcy for having demonstrated the great value of kangaroo-tendon in such operations. The tendon has been employed for many years at St. George's Hospital, London, and almost exclusively in ligating large vessels.[1] Its non-irritating properties and the time required for absorption—two to three months—have been experimentally demonstrated by Ballance and Edmunds, and I believe that an analysis of the cases presented to-night alone would be sufficient to establish its superiority to other suture-material for hernia operations. During the past three and a half years I have used kangaroo-tendon for all buried sutures in one hundred and eighty hernia operations; of these, one hundred and seventy-four healed by primary union, and the only relapse that has occurred was in a case of large congenital hernia of the umbilical cord in a child aged three years.

Silk, silkworm-gut, and silver wire have been in turn much lauded by noted surgeons as ideal suture-material for hernia operations. Their profound belief in asepsis as the embodiment of all the requisites of surgery has led them to think that the human body will rebel against nothing but germs: no matter how aseptic silk or silver wire may be, they are foreign bodies, and when placed near the surface of the body, particularly in a locality subjected to such constant motion as the inguinal canal, there is an effort on the part of Nature to rid herself of them. I am not dilating upon theoretical objections. I have seen sluggish discharging sinuses at the site of the incision many months after the operation for inguinal hernia where silk had been used, and in one case the patient remained practically an invalid nearly a year on account of this condition. Such instances are not rare, and, what is more, the ones I have observed occurred in the hands of men whose aseptic technique is as nearly perfect as any with which I am familiar.

Unless there are some advantages to be gained by using a non-absorbable suture, I see no reason why we should incur the risks of such results as I have mentioned.

In view of the many loose and contradictory statements as to the value of operations for the cure of hernia, there is nothing that will conduce more to settling this question upon scientific lines than to establish some definite period of time beyond which the hernia may be reasonably considered cured. Various periods have been given, but all

[1] Brit. Med. Journ., November 15, 1890, p. 1110.

of these have been based on impressions of surgeons derived from a limited number of cases. The limits more frequently given are three years or two years.

To ascertain whether these limits were in harmony with the facts, I have made a careful analysis of 250 cases of relapsed hernia observed and carefully recorded at the Hospital for Ruptured and Crippled during the past five years. These cases represent nearly all the operations in vogue during this time, and the large majority were operated upon by leading surgeons of New York and Brooklyn. One hundred and seventy-one operations were for non strangulated hernia, and seventy-nine for strangulated hernia.

These cases I have analyzed with reference to the time when relapse occurred, with the following results: Of the non-strangulated, 120 cases, or 70 per cent., relapsed one to six months; 27 cases, or 15.8 per cent., six to twelve months; 84.8 per cent. first year; 14.2 per cent. after first year; 5.8 per cent. one to two years; 8.4 per cent. two years.

Strangulated, 79 cases, 64.5 per cent. relapsed one to six months; 20 per cent., six to twelve months; 84.8 per cent., first year; 5.4 per cent., one to two years; 9.8 per cent., one to two years.

Some surgeons use ordinary non-chromicised catgut for the buried sutures, and even go so far as to state that the sooner the sutures are absorbed the better. As I have pointed out in a previous paper, the tissues to be united in closing the hernial canal are largely tendinous in structure, and the elaborate experiments of Busse[1] show that perfect tendinous union does not occur under ten weeks, or just about the period required for absorption in kangaroo-tendons. No better practical demonstration of the failure of catgut to meet the requirements of a suture in hernia operations could be had than the results in 19 cases of hernia in children, operated upon at the Hospital for Ruptured and Crippled in 1889–90, in which catgut was used. Of these 19 cases operated upon by suture of canal in part, and in part suture of external ring, 10 cases relapsed; 7 of these relapses occurred within three months after operation; 5 other cases were not traced, and only 2 were known to be sound three years after operation.

Having described the methods employed, let us analyze the cases now in detail.

Of the 112 cases operated upon by the Bassini method with kangaroo-tendon for the buried suture, primary union occurred in 109, or 97 per cent. In only one case was the suppuration more than slight and superficial, and that was only down to the aponeurosis. This case is now perfectly sound, one and one-half years after operation.

[1] Deut. Zeit. f. Chir., 1891-92, xxxi.

The percentage of cases followed by immediate healing of wound without suppuration obtained by the leading operators is stated by Sir William MacCormac[1] as follows: MacCormac, 80 per cent.; Kocher, 89 per cent.; Billroth, 39 per cent.; Schede, 35 per cent.; Macewen, 86.7 per cent.; Ball, 81.8 per cent.; McBurney, 81.6 per cent.; Halsted, 82 per cent.; Kuster, 79 per cent.

Final results. All but two of the cases of Bassini have been traced. Of these, 4 have gone without truss and without relapse two and one-half to three years; 10, two to two and one-half years; 18, one and one-half to two years; 17, one to one and one-half years; 20, six months to one year; 45 less than six months; 49 cases have gone more than one year.

Mortality. There has been but one death, caused by double pneumonia, in a child of five years. It was undoubtedly due to the effect of the ether, etc. The child had had measles five weeks before, and took the anæsthesia very badly. An autopsy showed double pneumonia, with no abdominal complications and no trouble in the wound. Death occurred on the fifth day.

Femoral hernia; five cases. The method employed was high ligation of the sac and suture of the crural opening with buried kangagroo-tendon. No relapse has occurred, and all the cases have been traced: 1 is well two years and eight months after operation; 1 is well twenty months after operation; 1 is well eighteen months after operation; the other two are recent cases.

Umbilical and ventral; four cases. These have all been operated upon during the past year, and are sound with one exception—a congenital hernia of the cord in a girl of three years. A slight recurrence took place in this case within three weeks after the operation, due to a severe bronchitis.

The method employed was excision of the umbilicus and sac, suture in three layers, with kangaroo-tendon for the buried suture.

Strangulated hernia. This condition has always been regarded by surgeons as too rare to be considered, many of the most noted surgeons having never seen a case.

Tariel, of Paris, has recently contributed a valuable paper on this subject, and has collected all of the cases thus far reported in surgical literature. He was able to find 128 cases under two years of age, with 74 recoveries.

I have operated upon 6 cases: 1 aged eight weeks, 1 aged eight months, 1 aged twelve months, 1 aged seven and one-half months, 1 aged five months, and 1 aged twenty-three months. All except one recovered, and that was practically moribund at the time of ope-

[1] Bradshaw Lecture, 1893.

ration. Simple herniotomy was performed without attempting radical cure.

Cæcal hernia. In eight cases the cæcum or appendix vermiformis formed the contents of the sac. In two cases the appendix alone was found, and in both these the tip of the appendix was firmly adherent to the bottom of the sac. The adhesions were separated and the appendix returned to the abdominal cavity. These two cases, as well as a considerable number where the mesenteric attachment of the bowel extends low down into the sac, emphasize the importance of opening the sac in *all cases* before ligation or suture.

Dr. W. L. Rodman, of Louisville, has recently reported a case where a sac which, as far as could be detected by careful examination, appeared perfectly empty, on ligation showed a severed appendix in the lower end.

In two of the strangulated cases the appendix and cæcum together were found. In one case the color of the appendix was so dark that I thought it more prudent to remove it. Recovery followed.

The other case was the child eight weeks old, nearly moribund at time of operation. Simple relief of strangulation was all that was warranted, and death occurred two days later. In a non-strangulated case of appendix hernia, the appendix if adherent can be readily freed and reduced; and I do not believe it to be the best surgery to attempt removal. I cannot but believe it adds something to the danger of the operation; and unless the success of the operation can be shown to be materially dependent upon its removal, I do not think it indicated.

Dressings and after-treatment. In all of the cases the dressings were moist iodoform and bichloride gauze, held firmly in place by rubber-plaster, over which cotton and a muslin-spica were applied. The scrotum was always left exposed. Fixation was secured by means of a plaster-of-Paris spica extending from the edge of the ribs to the ankle. This was kept on until the first dressing, or about the eighth day. The skin-sutures are entirely of fine catgut, which is usually found to have been entirely absorbed by the first dressing. None of the cases, with the exception of two or three of the early cases operated upon by suture of the canal with catgut, have worn trusses since the operation, and I do not believe a truss should be advised.

Of the 112 cases operated upon by the Bassini method, with kangaroo-tendon for the buried sutures, not a single relapse has occurred and not a single case has worn a truss.

The following table will give the more important points of the cases in detail:

No.	Age	Sex.	Nature of hernia and duration.	Operation.	Operator.	Primary result.	Final result.
1	8	M.	Right inguinal, congenital, complicated with hydrocele of cord.	Dec. 12, 1891	Czerny. Catgut-ligature; no drain.	Primary union.	Relapse 4 months after oper'n.
2	13	M.	Right inguinal, very large; 3 years' duration.	Dec. 28, 1891	Bassini. Silk for buried suture; no drain.	Very profuse suppuration and sloughing of tissues.	Relapse in 4 months.
3	6	M.	Left inguinal, congenital.	Jan 25, 1892	Czerny. Catgut-sutures; no drain.	Primary union.	Sound Dec. 1894
4	9	M.	Right inguinal; 4 years' duration.	Jan. 1892	Czerny. Silk-sutures; no drain.	Prim. union; sinus form'd after leaving hospital; sutures came out.	Relapse in 3 months.
5	13	M.	Left inguinal; 2 years.	Mar. 15, 1892	Czerny. Chromicised catgut; no drain.	Primary union.	Perfect; sound Oct. 20, 1894; no truss.
6	10	M.	Left inguinal, congenital.	Feb. 15, 1892	Czerny. Chromicised catgut; no drain.	Primary union.	Perfect Oct. 1, 1894
7	7	M.	Right inguinal.	Mar. 30, 1892	Bassini. Kangaroo-tendon for buried sutures; catgut for skin.	Primary union.	Firm Feb. 1894
8–9	7½	M.	Double inguinal; very large.	April 8, 1892	High ligation of sac and closure of canal with buried sutures of chromicised catgut; no drain.	Primary union, both sides.	Solid Oct. 1894
10–11	7	M.	Right femoral, left inguinal; left 3 years, right 6 months.	Apr. 28, 1892	High ligation of sac; suture canal with kangaroo-tendon; purse-string suture femoral canal.	Primary union, both sides	Perfect Oct. 1894
12	13	M.	Right inguinal; 11 years' duration; truss 7 yrs.	May 5, 1892	Bassini. Kangaroo-tendon for buried suture; no drainage.	Primary union.	Perfect Oct. 1894
13	7½	M.	Right inguinal, size of egg; one suture adherent.	June 6, 1894	Bassini. Kangaroo-tendon for buried suture; catgut for skin; no drain; omentum ligated.	Primary union.	Perfect Oct. 1894
14	4½	M.	Right inguinal, congenital.	June, 1892	Bassini. Kangaroo-tendon for buried suture; catgut for skin; no drain; omentum ligated.	Primary union.	Perfect Oct. 3, 1894
15	8 mos	M.	Right inguinal, 1 week; strangulated, 24 hours.	July 9, 1892	Canal closed with buried kangaroo-sutures; cord not transplanted.	Primary union; one week in hospital.	Oct. 3, 1894 perfectly sound; no truss worn.
16	14	M.	Left inguinal, congenital; size of egg.	July 26, 1892	Bassini's method; lower part of sac sutured over testis; kangaroo-tendon for buried suture.	Primary union; no truss.	Perfect Dec. 1894; no truss.
17	10	M.	Right inguinal, very large, congenital; complicated with hydrocele; reducible.	July 26, 1892	Bassini. Kangaroo-tendon for buried suture; no drain.	Primary union.	Sound Oct. 1894; no truss.
18	14	M.	Left inguinal; not held by truss; 1 year's duration.	Aug. 23, 1892	Bassini. Kangaroo-tendon for buried suture.	Primary union; two weeks in bed.	Sep. 29, 1894, perfect; no truss.
19	12	M.	Left inguinal, congenital.	Aug. 23, 1892	Bassini. Kangaroo-tendon for buried suture.	Primary union 2½ weeks.	Feb. 24, 1894, sound; no truss.
20	4	M.	Right inguinal, cæcal, congenital.	Sept. 13, 1892	Canal sutured; cord not transplanted, kangaroo tendon for suture; no drain.	Primary union.	Not traced.
21	11	M.	Right inguinal; several years; not held by truss.	Sept. 9, 1892	Bassini. Kangaroo-tendon; no drain.	Primary union.	Oct. 1, 1894, perfect; no truss.
22	9½	M.	Right inguinal.	Oct. 5, 1892	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Oct. 1, 1894

No.	Age	Sex.	Nature of hernia and duration.	Operation.	Operator.	Primary result.	Final result.
23	14	M.	Left inguinal, congenital; relapse after supposed cure from truss.	Oct. 29, 1892	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894; no truss.
24	12	M.	Left inguinal, very large, congenital.	Nov 1, 1892	Bassini. Kangaroo-tendon; no drain.	Primary union.	Feb. 1894, firm; no truss.
25	4	M	Right inguinal, congenital.	Nov 4, 1892	Bassini. Kangaroo-tendon; no drain.	Primary union.	Well Feb. 1894; no truss.
26	11	M.	Right inguinal.	Nov. 29, 1892	Bassini. Kangaroo-tendon; no drain.	Primary union.	Well Oct. 12, 1894
27	4	M.	Right inguinal; cæcal; (spine disease).	Jan. 6, 1893	Bassini. Kangaroo-tendon; no drain.	Primary union.	Sound Dec. 1894
28	4	M.	Case No. 27; left side.	Jan. 6, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Sound Dec. 1894
29	6	M.	Left inguinal, complicated with reducible hydrocele.	Jan. 20, 1893	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Sept. 1894
30	9	M.	Left inguinal; 4 years; no improvement with truss.	Jan. 1893	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Nov. 17, 1894
31	14	M.	Left inguinal.	Feb. 1893	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 15, 1894
32	7	M.	Left inguinal.	Feb. 1893	Bassini. Kangaroo-tendon; no drain.	Primary union	Perfect Feb. 1894
33	14	M.	Right inguinal, complicated with undescended testis.	Mar. 10, 1893	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Sept 29, 1894
34	10	F.	Right inguinal.	Mar. 10, 1893	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
35	10	M.	Right inguinal; cæcal; appendix adherent to sac.	Mar. 24, 1893	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
36	14	F.	Right femoral.	April 4, 1893	Purse-string suture, kangaroo-tendon.	Primary union.	Perfect Dec. 10, 1894
37–38	12	M.	Double inguinal; recurrent few months after Czerny operation, done February, 1890.	Apr. 11, 1893	Bassini.	Primary union.	Perfect Oct. 6, 1894
39	13	M.	Right inguinal, complicated with undescended testis.	Feb. 1893	Bassini.	Primary union.	Perfect Feb. 1894
40	5	M.	Right inguinal.	April 4, 1893	Bassini.	Primary union.	Perfect Feb. 27, 1894
41	7½	M.	Strangulated; cæcal and appendix.	June 1, 1893	Appendix removed.	Primary union.	Perfect; died four weeks later of another trouble.
42	11	F.	Right femoral.	June 6, 1893	Purse-string suture.	Primary union.	Perfect Oct. 20, 1894
43	9	M.	Right inguinal; cæcal.	June 13, 1893	Bassini.	Primary union.	Perfect Sept. 28, 1894
44	11	M.	Right inguinal.	June 18, 1893	Bassini.	Primary union.	Perfect Oct 20, 1894
45	11	M.	Right inguinal.	July 18, 1893	Bassini.	Very profuse suppuration to deep fascia.	Perfect Nov. 2, 1894
46	8	M	Right inguinal, congenital, with undescended testis.	Jan. 18, 1893	Bassini. Kangaroo-tendon for testis anchored to wire from outside scrotum; testis atrophied; no drain.	Primary union.	Perfect Oct. 1894; testis atrophied.
47	9	M.	Right inguinal; 7 years' duration	Aug. 18, 1893	Bassini. Kangaroo-tendon; no drain.	Primary union; 2½ weeks in bed.	Perfect Feb. 27, 1894
48	11	M.	Right inguinal, congenital; size of goose-egg.	Aug. 1893	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Oct. 11, 1893; not traced.
49	8	F.	Umbilical, congenital.	Aug. 29, 1893	Omphalectomy suture; 3 large kangaroo-tendons for buried suture.	Primary union.	?
50	11	M.	Right inguinal, congenital; truss 11 years.	Aug. 11, 1893	Bassini. Kangaroo-tendon; no drain.	Primary union, three weeks.	Well Dec. 1894
51	12	F.	Right femoral; 7 years' duration; truss entire time.	Sept. 25, 1893	High ligation of sac; purse-string suture of canal; kang.-tendon.	Primary union, three weeks.	Well Nov. 1893

No.	Age	Sex.	Nature of hernia and duration.	Operation.	Operator.	Primary result.	Final result.
52	5	M.	Right inguinal, congenital.	Oct. 10, 1893	Bassini. Kangaroo-tendon.	Primary union, 2½ weeks.	Well Nov.1, 1894
53	12	M.	Right inguinal; 6 years' duration.	Oct. 10, 1893	Bassini. Kangaroo-tendon.	Primary union.	Well Oct. 6, 1894
54–55	5	M.	Double inguinal, congenital, large.	Oct. 17, 1893	Bassini. Kangaroo-tendon.	Primary union.	Well Sept. 25, 1894
56	10	M.	Right inguinal; duration 3 years.	Nov.14, 1893	Bassini. Kangaroo-tendon.	Primary union.	Well Sept. 29, 1894
57	7	M.	Right inguinal, size of goose-egg; since infancy.	Nov.14, 1893	Bassini. Kangaroo-tendon.	Primary union.	Well Oct. 1, 1894
58	4½	M.	Right inguinal; cæcal.	Nov.21, 1893	Bassini. Kangaroo-tendon.	Wound healed primarily; orchitis which suppurated second week.	Well April 26, 1894
59–60	14	F.	Double inguinal.	Nov.28, 1893	Bassini. Kangaroo-tendon.	Very slight suppuration on suture-hole.	Well Nov. 3, 1894
61–62	8½	M.	Double inginal, congenital; size of fist both sides.	Dec. 1, 19, 1893	Bassini. Kangaroo-tendon.	Primary union.	Well March 6, 1894
63–64	6	M.	Double inguinal, with Pott's disease.	Left, Dec. 22, 1893; right, Feb. 6, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Feb. 5, 1894
65	7½	M.	Right inguinal, since 5 weeks old.	Dec. 29, 1893	Bassini. Kangaroo-tendon.	Primary union.	Perfect Nov.3, 1894
66	5	M.	Left inguinal, with Pott's disease.	Jan. 9, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Nov. 1894
67	3¾	M.	Left inguinal, complicated with Pott's disease.	Jan. 9, 1894	Bassini. Kangaroo-tendon.	Primary union.	Died few weeks later tubercular meningitis.
68–69	6	M.	Double inguinal, with Pott's disease.	Jan. 30, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Sept. 1894
70	6	M.	Right inguinal, congenital.	Jan. 30, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Oct. 1, 1894
71	7½	M.	Left inguinal; hernia in infancy cured with truss; relapsed 2 years ago.	Feb. 13, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Sept 29,1894
72	4	M.	Left inguinal, congenital; size large orange.	Feb. 13, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Apr. 6, 1894
73–74	2½	M.	Double inguinal, congenital; truss since 6 weeks old; very large; uncomfortable.	Right, Feb. 16; left, Sept 27, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Dec. 1, 1894
75	6	M.	Right inguinal.	Feb. 1894	Bassini. Kangaroo-tendon.	Primary union.	Died ou 8th day; double pneumonia confirmed by autopsy.
76	10	M.	Left inguinal; very large.	Mar.30, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Dec. 1, 1894
77	9	M.	Right inguinal, scrotal; since infancy.	Apr. 10, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Oct. 6, 1894
78	12	F.	Double inguinal; operation right side; congenital.	Apr. 20, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Dec. 1893
79	8½	M.	Right inguinal; duration 6 years; hernia vermiform appendix.	Apr. 20, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Dec.15,1894
80	6	M.	Left inguinal; 3 years truss treatment.	Apr. 19, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Sept. 1894
81	14	M.	Left inguinal; since infancy.	May 8, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
82	4	M.	Right inguinal; cæcal; operation for recurrence; size goose-egg; irreducible, adherent.	May 15, 1894	Canal sutured with kangaroo-tendons; ganze-drain.	Primary union except at site of drain.	Well Dec. 11, 1894
83	11	M.	Right inguinal; 8 years.	May 8, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Aug.21.1894

No.	Age	Sex.	Nature of hernia and duration.	Operation.	Operator.	Primary result.	Final result.
84	3	F.	Hernia of umbilical cord, congenital; size goose-egg.	Nov. 1893	Excision of umbilicus and sac; suture fascia; kangaroo-tendon; catgut for skin.	Primary union.	Slight relapse few weeks after operation.
85	13	F.	Umbilical; since infancy.	June 12, 1894	Excision of umbilicus; sutures kangaroo-tendon buried.	Primary union.	Perfect Oct.17, 1894
86	9	M.	Left inguinal, congenital; undescended testis.	June 12, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Oct. 5, 1894
87	8	M.	Right inguinal; since infancy; truss 3 years.	June 23, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Nov.12,1894
88	4	F.	Ventral; size of English walnut, just above navel.	June 19, 1894	Suture fascia with kangaroo-tendon.	Primary union.	Perfect Oct. 1894
89	7½	M.	Right inguinal.	May 18, 1894	Bassini.	Primary union.	Perfect July, 1894
90	4	F.	Right inguinal; 2½ yrs.	July 6, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Oct. 4, 1894
91	7	M.	Right inguinal, complicated with reducible hydrocele.	July 9, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Sept. 1894
92	6	M.	Right inguinal, since 3 months old.	July 10, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect
93	10	M.	Left inguinal; 4 years.	July 10, 1894	Bassini Kangaroo-tendon.	Primary union.	Perfect Nov. 3,1894
94	7	M.	Right inguinal; since 6 weeks old.	July 20, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Aug 24,1894
95	9	M.	Right inguinal; truss 2 years.	July 20, 1894	Bassini. Kangaroo-tendon.	Primary union.	
96	12	M	Right inguinal, congenital.	July 27, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Oct. 4, 1894
97	10	M.	Right inguinal.	Aug. 3, 1894	Bassini. Kangaroo-tendon.	Primary union.	Sound Dec.15,1894
98–99	9	M.	Double inguinal, with double reducible hydrocele.	Aug. 7, 1894	Double Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Nov.13,1894
100	7	M.	Right inguinal; vermiform appendix, adherent, reducible.	Aug.14, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Nov.24,1894
101	14	M.	Left inguinal; since infancy; relapsed after truss "cure."	Aug.14, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Sept.24,1894
102	9	M.	Right inguinal, congenital; truss 7 years.	Aug.21, 1894	Bassini. Kangaroo-tendon; no drain.	Slight suppuration tenth day.	Perfect Oct.11,1894
103	4	M.	Right inguinal; since infancy	Aug.28, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Oct. 4, 1894
104	10	M.	Right inguinal; 7½ yrs.; truss 6 yrs.	Sept.5, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Oct. 3, 1894
105	9	F.	Right inguinal; 6 years.	Sept.27, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Nov. 1894
106	4	F.	Right inguinal.	Oct. 4, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Nov. 1894
107	11	F.	Right femoral; 6 years; size of egg.	Oct. 5, 1894	Excision of sac; suture canal; kangaroo-tendon; no drainage.	Primary union.	Perfect Dec. 1894
108	5	M.	Right inguinal; 3 years.	Oct. 1, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Dec. 1894
109	6	M.	Right inguinal, congenital; truss 4 years.	Oct. 9, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Dec 1894
110	6	M.	Left inguinal; 3 years.	Oct. 1, 1894	Bassini. Kangaroo-tendon.	Primary union	Perfect Dec. 1894
111	5½	M.	Right inguinal, with large reducible hydrocele.	Oct. 9, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Dec. 1894
112	9	F.	Right inguinal.	Oct. 9, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Dec. 1894
113	6½	M.	Right inguinal; 4½ yrs.	Oct. 9, 1894	Bassini. Kangaroo-tendon.	Primary union.	Perfect Dec. 1894
114–115	11	M.	Double inguinal.	Oct.25, 1894	Double Bassini. Kangaroo-tendon right side; chromicised catgut left.	Fourth week small sinus at site of suture where ch. catgut used.	Perfect Dec. 1894
116	13	M.	Right inguinal; 6 years.	Oct. 26, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
117	12	M.	Right inguinal; since infancy.	Oct. 26, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894

No.	Age	Sex.	Nature of hernia and duration.	Operation.	Operator.	Primary result.	Final result.
118	11	M.	Left inguinal; 3 years.	Oct. 26, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
119–120	10½	M.	Double inguinal; 3 yrs.; treated 3 years with truss.	Oct. 26, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
121	5 mos	M.	Strangulated inguinal right; strangulated 48 hours.	Oct. 22, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
122	5	M.	Right inguinal.	Nov. 1, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
123	4	M.	Right inguinal.	Nov. 8, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union	Perfect Dec. 1894
124	13	M.	Right inguinal.	Nov. 2, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
125	7½	M	Double inguinal; operation left side; 7 years' truss treatment.	Nov 16, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
126	7	M	Right inguinal.	Nov.15, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
127–128	9	M.	Double inguinal; 5 years	Nov.30, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
129	7	M.	Right inguinal; size of orange; since infancy.	Nov.23, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
130	7	F.	Right inguinal; 2½ yrs.	Dec. 1, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec. 1894
131	23 mos	M.	Strangulated, right inguinal	Dec. 7, 1894	Bassini. Kangaroo-ten don; no drain.	Primary union.	Perfect Dec. 1894
132–133	5½	M.	Double inguinal; duration 4½ years.	Dec. 7, 1894	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect Dec 1894
134	12 mos	M.	Left inguinal strangulated.	Feb. 1893	Bassini. Kangaroo-tendon; no drain.	Primary union.	Perfect July, 1894

OSTEOMALACIA, WITH A NEW CASE.[1]

By George Dock, M.D.,

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Mrs. R., aged twenty-four years, housewife, was admitted to the hospital of the University of Michigan April 1, 1892, and gave the following history:

Father in good health, but appears to have had syphilis. Mother has a goitre, "large as a man's head," of twenty-five years' duration; otherwise well. Patient has four brothers, all strong and healthy. Neither the patient nor the father know of any bone-disease or malignant disease in the family.

Patient was born in northwestern Pennsylvania, but has lived in the northern part of the lower peninsula of Michigan for thirteen years. As a child patient was not strong; was frequently affected with diarrhœa; had whooping-cough; in the fall of 1891 had a severe attack of diphtheria. Menstruation began at thirteen and was normal. At seventeen was married to a healthy young man who worked a small farm. Two years after marriage the first child was born. During the pregnancy there were frequent attacks of rheumatic pain which patient

[1] Read, with demonstration of specimens, at the meeting of the Association of American Physicians, Washington.

cannot clearly describe. Delivery was normal, but there was difficulty in the removal of the placenta. This was followed by hemorrhage so severe that patient "nearly bled to death." The hemorrhage was checked by cold douches, which were followed by severe pain in the pelvis. This pain has continued, varying in severity, to the present time. Notwithstanding the complications mentioned the patient nursed the child (a boy) for fourteen months. Two years after the birth of the first child she had a second. The placenta was again adherent, and its removal followed by hemorrhage. She nursed this child (girl) for fourteen months. The children, five and three years of age, are well grown and healthy. The boy has a congenital deformity of the right thumb, the metacarpus and first phalanx being absent and the terminal phalanx rudimentary.

In the spring of 1890 pains came on gradually in the knees. The joints were sore and painful, especially in bad weather, increased by walking, but there was no stiffness. There was also pain in the liver-region and between the shoulders. The pain was severe and constant, and gradually grew worse for about six months, when it remained about the same. On the 25th of December, 1890, the patient slipped while getting out of a sleigh, and fell lightly to the ground. On rising she found the left femur broken at the upper part. A physician could not be obtained for a day. There was great pain, but no swelling. The thigh was bandaged and extension applied with a twenty-pound weight. After eight or nine weeks the bone had united with slight deformity. The patient could not walk, however, but seemed to have lost all her strength. The pains in the legs and body continued, but the patient was able to sit up nearly every day. In the summer of 1891 the patient was treated in a homœopathic hospital, probably for ununited fracture, though perhaps for rheumatism. There was no improvement, but the condition grew worse. Painful cramps began in the right leg. At that time the patient noticed that her right leg was "drawing-up," and that her heart beat rapidly. In August, 1891, while raising herself in a chair, she strained the right arm. Since then the arm and shoulder have been painful. In December, 1891, she went to bed on account of severe pain in the pelvis, worse at the menstrual period, and cramp in the legs, and has not been able to sit up since then. She has become very weak; has frequent "fainting-spells" and palpitation of the heart. The appetite is very poor, vomiting after meals rather frequent. The bowels are regular. Sleep is interrupted by coughing and pain. Cough is frequent, with abundant expectoration. Menstruation absent for three months.

Status præsens, April 1, 1892. The patient lies on her back; her expression indicates great pain. There is slight deafness, and the memory and intelligence of the patient are very poor. The normal height is not known; the patient measures now 139 cm. from vertex to right heel. Weight has been 148 pounds, now not more than 110. The bones of the upper part of the body and arms are slender; those of the legs thick. The skin and mucous membranes are pale. The panniculus is wasted everywhere; the muscles small and flabby. Tongue yellow coated, voice nasal. Thyroid enlarged, especially the middle and right lobes; this has existed since puberty.

Thorax narrow, flattened in front and at the sides. The manubrium concave, especially on the right side. The ribs are very yielding and

elastic, painful on pressure. On the right side, in the habitual position, the ribs are in contact with the crest of the ilium; on the left side the twelfth rib is a hand's breadth from the ilium. The distance between the anterior superior spines is 23 cm., between the iliac crests 28.5 cm. The iliac bones yield when pressed together, and spring back when released. The pelvis is very flat, the promontory being on the same plane as the pubis. The promontory could not be reached when examined *per vaginam*. (The pelvis was examined in the obstetric clinic, but the notes of measurements have been lost.)

The left femur lies in front of the right, resting on the latter just above the knee. The bone is strongly curved forward and then inward at the upper third, where there is a fracture with great thickening of the bone. The lower end of the left patella is 28 cm. below the pubis.

The femur cannot be adducted or abducted on account of spasms in the muscles. The shaft of the femur is thickened in its whole length. There is free motion in the left knee. The left tibia is well formed, as are also the foot and ankle.

The right femur, greatly thickened, is curved outward in the upper part; inward below. There are fractures at the upper and lower thirds and just above the condyles. There is also crepitus at the upper end, apparently in the surgical neck. The knee is turned in and a little to the right of the median line. The lower end of the patella is 35 cm. below the edge of the pubis. There is crepitus in the knee-joint. The right tibia is thickened, especially at the lower third, where there is a large hard mass. The right foot and ankle are well formed. The heel extends 5 cm. beyond that of the left foot.

During the examination strong contractions came on in the muscles of the legs, especially those of the right thigh. These could be brought on by a slight touch, but were sometimes spontaneous. For this reason the knee-reflexes could not be carefully examined. There is no ankle-clonus on the left side, but it is present on the right.

The clavicles and arms show no deformities. Motion of the right arm is painful.

Examination of mouth, pharynx, and larynx negative. The copious purulent sputum (pharyngeal) was examined many times for tubercle bacilli, with negative results.

Percussion and auscultation of the lungs negative.

Apex-beat in the fourth intercostal space, just outside the nipple-line. There is a strong impulse over the whole cardiac area. The absolute heart-dulness begins on the third rib and extends to the position of the apex-beat and to the left edge of the sternum. The heart's action is very rapid, but regular. The first and second sounds very much alike at the apex. The pulmonary second is loudest just below the clavicle and ends in a distinct click.

Radial pulse 135, small, tension low.

Examination of the abdomen negative. Liver-dulness from the fourth intercostal space in the right parasternal line to two fingers' breadth above the costal margin in the same line. In the median line the dulness ends just below the tip of the ensiform.

Splenic dulness not enlarged.

The urine was examined frequently during the patient's stay in the hospital; but as it was often passed involuntarily systematic quantitative examinations could not be made. Quantity: 900–1500 c.c. (twenty-

four hours). Sp. gr.: 1008–1014. Reaction: usually alkaline. Color: pale yellow, turbid. Odor: peculiar, disagreeable, "onion" odor. Albumin: always a trace, to about one-eighth bulk on standing. Albumose was usually present in small quantity; after precipitation of the albumin by acetic acid and heat and filtering, the filtrate gave positive tests,as precipitation with HNO_3 in the cold, disappearing on heating. Indican: always in slight excess. Diazo-reaction: usually a deep orange-red. At one time for three successive days, in connection with a rise of temperature of unknown origin, gastric disturbance, and headache, a reaction was obtained, of deep garnet-red color, with pink foam. Fehling's test always negative. Urea: 14 to 21 grm. in twenty-four hours. Numerous tests for lactic acid negative. Sediment: always a heavy deposit of triple phosphate crystals, calcium oxalate, and amorphous phosphates; many leucocytes, epithelial cells, cylindroids, and occasionally a few short hyaline casts.

During the first month after leaving the hospital urine was examined a number of times, showing absence of albumose and decrease of albumin. Urine usually acid, with small amount of sediment.

From September, 1892, until time of death, small calculi were constantly passed with the urine. These were either very hard, shining, sharp-pointed crystals of calcium oxalate, or dark-brown, smooth, and soft concretions of calcium phosphate. During this time the urine was alkaline. Sediment was so great that the pus-basin used as a urinal would be heavily coated. Masses of phosphate "mud" were frequently passed, consisting of thick deposit of "coffin-lid" and amorphous phosphates; albumin constantly present at this time, but not in large amount; albumose in small quantities.

As urine could not be collected with any accuracy, the exact quantitative estimation of phosphates could not be made.

For about six weeks the patient grew worse. The temperature rose daily to 102° or 103°; there was frequent vomiting of food and bile, several times mixed with blood. Patient could not move at all, and necessary moving caused intense pain and contractures. Spasmodic contractions, often spontaneous, were frequent, especially in the muscles of the thighs. Gradually the femurs were bent further inward and upward, so that the legs were crossed above the knees, the left femur lying upon the right, as in the illustration. There were also cramps in the right arm. From two to five times daily there were attacks, beginning with dizziness and passing into unconsciousness. The pupils dilated; head moved from side to side; there was marked tremor of right extremities, beginning in fingers, involving the whole arm, and then appearing in the leg. These attacks lasted from two to ten minutes, and were followed by intense headache.

About the middle of May improvement began. Vomiting ceased; appetite and bowels became normal; fever disappeared, and the patient had no more fainting-spells. The cramps and pains also decreased, and the softening and bending of the bones seemed to be at a standstill. By August 1st the condition had become very much improved. The patient could raise her right hand to the head and lift the left leg up from the right. She had increased in flesh. About this time (August 1st)[1] she left the hospital and was taken to a boarding-house. Here,

[1] She was observed after this time by my assistant, Dr. A. S. Warthin, to whom I am indebted for valuable assistance in the study of the case.

under the most unfavorable conditions, still greater improvement was made. All gastric symptoms disappeared; she had a ravenous appetite, and ate heartily of the plainest food. Bowels were regular; temperature normal; there were no fainting-attacks, pains, or cramps. Menstruation began after an absence of eight months. Bones seemed to become harder and thorax less elastic; the fractures in the femurs had apparently united. Crepitus disappeared; the legs could be moved without pain. Patient could move from one side of the bed to the other, and could sit propped up with pillows. Could use right arm freely, but motion in shoulders was restricted. She passed her time in sewing. The cough and expectoration continued.

In October it became evident that the disease was again progressing. The patient lost flesh; pain returned in the limbs; the fainting-spells began; digestion was much disturbed, with marked tympanites, acid eructations, vomiting, and complete loss of appetite. The right femur became very sensitive, and the patient could no longer move about on the bed; could lift the right arm only by the aid of the left. The mind was greatly depressed and irritable. At times there was slight delirium, and sleep was disturbed. Toward the last of September, as mentioned, she began to pass small calculi, very hard, with sharp-pointed surfaces, causing intense pain before and after urination. She had previously passed a few at long intervals. By October 1st there was severe cystitis. Bladder was sounded for stone, but none found. There were numerous attacks of severe renal colic daily. Menstruation had again ceased, and never returned. Changes in the thorax became more noticeable; the sternum seemed to have slipped down toward the abdomen; heart-dulness displaced still further upward; the right clavicle was bent backward; the left leg was curved and drawn upward more than before.

From October to February, 1893, the condition gradually grew worse, though there were many periods when the patient seemed much better. The cystitis improved under treatment, and the gastric symptoms also; but there was much pain from the passage of gravel, and attacks of renal colic were of almost daily occurrence. In February the patient was

moved to a new house freshly papered and damp. She took cold, and from that time the disease made rapid progress. She could not make any voluntary movements except limited motion of the hands. Complained constantly of severe pains throughout whole body, especially in back. All necessary handling of the patient was exceedingly painful. Fainting-spells were frequent, and patient became greatly depressed and fretful. Gastric symptoms became worse, and neither food nor medicine could be retained. There were frequent periods of collapse, with rapid, weak, and irregular heart. The passage of gravel and the attacks of renal colic increased. Cramps began in the muscles of the back, and kyphosis formed gradually. Two large bedsores now appeared—one on the sacrum, the other on the right leg under the knee, where it pressed on the left. The thorax seemed more yielding. The right femur became soft and elastic. A loud systolic murmur developed over the heart-area. There was decreased resonance over the left lower lobe of lung.

On April 26, 1893, the patient, while complaining of severe pains in the back, had a fainting-spell, which ended fatally.

Treatment. During the first five weeks of patient's stay in the hospital treatment was wholly symptomatic. A concentrated syrup of lime was prescribed later, but as the gastric symptoms became so much worse it was stopped. Phenacetin, quinine, and salicylates had no effect upon the pains and did not reduce the temperature. The after-effects of morphine were so disagreeable and the general condition was made so much worse by it that it was given but a few times. Codeine was given with good results, in the form of codeine phosphate, gr. $\frac{1}{3}$ p. r. n., the daily dose being from one to four grains. The pains were immediately relieved by this; the patient slept well; gastric symptoms improved; and there were no unpleasant after-effects. The temperature, which every day had ranged from 99° to 102° or 103°, fell to 98°–99°, and remained there with but two or three slight variations. This fall of temperature took place on the third day after the use of codeine was begun, and was permanent.

From this time until the patient left the hospital, about eleven weeks afterward, codeine was constantly given; and all through this period there was constant improvement, as mentioned above. As gastric symptoms subsided the concentrated syrup of lime, f℥j t. i. d., was given again. After leaving the hospital the codeine (gr. $\frac{1}{3}$, at night) and syrup of lime were continued. In addition maltine with hypophosphites was given, f℥ss t. i. d. The diet was largely of cereals. Phosphorus, in doses of gr. $\frac{1}{100}$, was also tried; but the patient complaining that it caused stomach disturbance, it was stopped, and it was also necessary to discontinue the use of maltine and the syrup of lime on account of similar conditions. The treatment by chloral hydrate, as recommended by Petrone,[1] was also tried, fifteen grains being given t. i. d. for a month. Through all this time the condition became gradually worse. After this no further attempt was made to carry out specific treatment, and attention was given to the most important symptoms. Of these the renal colic received the chief attention, and was treated in every possible way, without great success. The calculi were constantly formed, and

[1] La Riforma Medica, 1892, No. 163, in Centralblatt für Bakt. u. Parasitenkunde, 1892, Bd. xii. p. 865.

were passed in incredibly large numbers, often twenty daily, besides large quantities of sand. The patient became accustomed to the codeine, so that the dose was increased finally to eight grains daily; it then seemed to lose its effect, and during the last five weeks it was necessary, on account of the extreme pain, to keep the patient almost constantly under the influence of morphine.

Autopsy, two hours after death. No rigor mortis. Large amount of subcutaneous fat. Omentum well preserved. Diaphragm at level of third rib on the right and third intercostal space on the left. Sternum soft, but partly calcified. Ribs can be cut through with a knife, but have thin shells of bone. They are much atrophied, the larger ones measuring 10 x 2 mm. on section, the cartilage just beyond the articulation measuring 13 x 5 mm., and not swollen.

Lungs partly distended. Left lower lobe collapsed; surface granular, pink, with small, yellowish nodules (emphysema). Slight injection of bronchial mucous membrane.

Pericardium contains normal amount of fluid. White spot, size of dime, over right ventricle; several small cloudy spots on posterior wall.

Heart of normal size, lying one interspace higher than normal. Right ventricle contains small, soft, white clot continuous with a currant-jelly clot. Tricuspid and pulmonary valves normal. Left ventricle contains very long currant-jelly clot extending into auricle and aorta. Mitral and aortic valves normal; aorta narrow; intima smooth.

Liver slightly smaller, but otherwise apparently normal. Spleen 13 cm. long, 4 wide, 3 thick, anæmic, and rather hard. Cut surface dry, glistening. Malpighian bodies show faintly; the trabeculæ increased.

Left kidney 11 x 4.5 x 4 cm. Pyramids anæmic, with small white specks (calcareous); also similar white specks, size of small pinhead, in the pale cortex. Pelvis contains numerous small calculi. Left ureter normal. Right kidney 10 x 6 x 4 cm. Contains numerous white specks like those in the left kidney in all parts; pelvis contains numerous calculi. Right ureter dilated in its whole length. Seven small, hard, irregular calculi are lodged in its lower end just above the bladder.

Bladder contracted; contains two small calculi.

Uterus 5 x 3 cm.; pale. Tubes normal. Ovaries fibroid; 4½ x 1½ cm., white, anæmic, and nodular on the surface, with small cysts in the interior. The vessels in the ligaments show no abnormality.

All the bones of the pelvis are soft, cutting easily and breaking down like wet and rotten wood under the finger. The pubic arch on the same plane as the promontory, and distant from the latter 10 cm. The superior outlet of the pelvis of normal shape. The left acetabulum is lower down than the pubis, and points directly outward; the right one in the normal position.

The bones of the upper extremities can be bent or indented by pressing the fingers through the skin, but are not deformed. The clavicles and scapulæ and skull are hard and unyielding (as felt through the skin).

The bones of the lower extremities are all soft. The right tibia is broken just below the knee, and curved where it is crossed by the left.

Both femurs are strongly curved outward at the upper third; their heads are distorted and atrophied; the necks almost obliterated; the great trochanters higher than the head; the shafts irregularly thickened; the condyles distorted and atrophied. The right femur has fractures

without evidence of callus at the upper third and the lower third, and another just above the condyles, which may have been made at the autopsy.

The left one has a fracture at the upper third, and one above the condyles, both probably made in getting out the bone. Under the periosteum just above the condyles on the anterior surface of the left femur is a soft area 2 x 3 cm. in diameter.

The muscles of the thigh are very anæmic and yellow, especially close to the bone. There is also an unusual amount of interstitial fat.

The femurs were split longitudinally with a knife and show similar conditions on the whole, with slight variations to be mentioned.

The diameters of the right femur, which are not far from those of the left, are as follows: head, 37 mm.; neck, 33 mm.; just below trochanter, 35 mm.; upper third, 30 mm.; middle, 42 mm.; lower third, 47 mm.; above condyles, 30 mm.

The head of the femur has a soft cartilaginous shell; the insertion of the ligamentum teres was pulled out in removing the bone. Within the shell is pale-yellow fat, containing numerous fine spicules of bone.

The shaft is compressible throughout its length, deriving most of its strength from the periosteum. The neck and upper part of the shaft usually contain fatty marrow with variable quantities of spicules, filling in the whole width of the bone. On the outer side, just above the upper fracture, is a strip of pale-red marrow extending from the periosteum inward from ½ to 1 cm. This also contains spicules of bone. Just below the great trochanter is a roundish mass, 15 mm. in diameter, having the color and consistence of hyaline cartilage. It is continuous with the yellow marrow on one side, but free on the other, without having a definite capsule. On section this shows small cystic cavities, containing colloid substance.

In the middle of the shaft is a cyst, oval in shape, with diameters of 40 and 30 cm., lying obliquely to the long axis and reaching to the periosteum on one side. Its walls are smooth and translucent, hard to the touch in some places, but can be cut with a knife.

Above this are two areas undergoing cystic softening; below it several others of different sizes, the largest measuring 20 x 17 mm. in diameter. The smaller cysts contain unaltered blood (microscopic examination); the larger ones clear, odorless, oily fluid of neutral reaction. This did not give the chloride of iron and carbolic reaction for lactic acid, but was not tested otherwise.

The middle half of the shaft contains pink or red lymphoid and gelatinous marrow alternating, filling in the upper part of the bone-cavity, from the periosteum, ⅔–¾ of the diameter; the outer ¼–⅓ being filled with fatty marrow. Both kinds of marrow contain the bone-spicules described. From the lower third of the femur the inner part is made up of fatty marrow continuous with that of the condyles. The widest part of the shaft is that containing the greatest amount of red lymphoid or gelatinous marrow. The former has a consistency, when fresh, varying from that of a fresh blood-clot, to a normal, slightly hyperæmic spleen. The gelatinous marrow, darker red, has the consistency of œdematous connective tissue. The fatty marrow, including the parts in the head and condyles, is very anæmic.

The condyles have only a thin cartilaginous shell, filled with yellow marrow and trabeculæ, the latter being more numerous than those in

other parts. Only in the part within the intercondyloid notch is there a small amount of red, gelatinous marrow.

The left femur presents changes on the whole like those of the right. It is, however, not so curved in the shaft. It contains also very few, and these small, cysts.

In the lower part of the shaft is a soft mass, just beneath the periosteum, measuring 2 x 3 cm. in diameter. On section this is dark red, resembling a blood-clot, but firmer; it is intimately adherent toward the centre of the bone to a firmer whitish (lymphoid) tissue.

The bones of the pelvis have hard but very thin plates of bone under the periosteum, but can be cut through with a cartilage-knife. The space between the plates is filled with yellow, dirty-looking, fatty marrow, traversed by spicules of bone and trabeculæ, some of which are as much as 2 mm. in diameter.

Owing to a misunderstanding the other bones could not be examined.

Microscopic examination. For histological examination I could use only the femurs, parts of the pelvis, and a piece of rib. These were examined fresh, and after hardening in Müller's fluid and in alcohol. The specimens hardened in alcohol were decalcified by von Ebner's solution.

Femur. The periosteum is thickened almost everywhere, and has a fibroid structure with few nuclei.

The original compact layer of bone can nowhere be recognized. Immediately beneath the periosteum is a layer of fibrous tissue containing bony tissue in considerable quantity. This layer is usually from 0.5 to 1.5 mm. in thickness, but in some places, as near cysts, it extends further toward the centre of the femur. There is not a larger quantity, however, at the seats of fractures. The outer layer of bony tissue is made up of spicules of bone, which can best be examined by tearing out with forceps. They appear then as compound, branching processes, often perforated or forming meshes. The condition as regards calcification can best be recognized in the fresh state, or by pulling out splinters, rather than in sections.

Examined in this way it can be seen that the spicules are usually calcified, but not in their whole extent. Usually there is an irregular border on one or both sides, and sometimes the fibre is free from lime in its whole width for some distance, the margins of the calcified part being rather uneven. The calcified areas contain lacunæ and canaliculi, which are usually of normal appearance, though sometimes the lacunæ are large and the canaliculi few or absent. The calcified part usually shows distinct lamellæ. The uncalcified part is either homogeneous or finely granular, or less frequently coarsely fibrillated longitudinally. Occasionally it shows small lacunæ. Transverse perforating fibres cannot be distinctly seen.

These fibres or spicules, as stated, form part of the outer layer of the femurs, but they do not form a continuous layer, nor does their direction or the course of their lamellæ indicate that they are part of the original compacta, except in rare instances. This is true of transverse as well as longitudinal sections. The fibrous tissue in which they lie varies greatly in character in different parts. In some places it is dense and firm-looking; in others, soft, loose-meshed, or even having a myxomatous appearance. Long spindle, or oval or stellate cells lie rather sparingly in the fibrous tissue, and in some places there are collections

of small round cells, occasionally cells resembling marrow-cells (eosinophilous rarely), and at times polynuclear giant cells. Usually the fibres of connective tissue are parallel to the spicules, and present in sections an alveolar arrangement. This tissue is perforated by large but thin-walled vessels. In sections the structure of the bone-spicules cannot be made out so clearly as in fresh specimens, but in sections made from preparations decalcified in Müller's fluid the so-called "carmine border" can sometimes be made out, corresponding to the decalcified parts described. In stained sections the bone-corpuscles usually appear in the parts previously calcified, but they are often small and stain badly. In sections the edges of the bone-fibres are usually smooth, but sometimes they are irregular, as if gnawed. Sometimes the edge of the fibre is lined by a thin membrane containing spindle-shaped nuclei, but typical osteoblasts cannot be found. Occasionally cells having the aspect of osteoclasts may be seen lying close to the edge of the bone.

Within this denser layer, but often passing into it gradually, is the widened marrow-cavity with its different kinds of contents as described above.

There are microscopic differences corresponding to the macroscopic ones. The simplest tissue is the yellowish part of the marrow. This appears under the microscope as fat tissue, with a varying amount of lymphoid marrow between the vesicles. The lymphoid material contains besides the ordinary small round cells a small proportion of eosinophilous cells, usually two or three times the diameter of a red blood-corpuscle, with a single round or oval nucleus. There are also in this part a few epithelioid cells with pale nuclei, and very rarely polynuclear giant cells. Bony spicules are rare in this tissue in the shaft.

The reddish marrow shows usually a small spindle-celled structure, containing large numbers of giant cells. These have from two to thirty or forty, usually more than eight to ten, round or oval nuclei in the centre or near one end of the body of the cell. The cells vary from 10 to 50 μ. in diameter, are usually round or short oval, but sometimes long oval. They are never of irregular outline, like those in myeloid tumors. The nuclei usually stain deeply with nuclear dyes. The bodies take protoplasmic dyes well, but often have contents which affect the color, such as blood-pigment or bits of osteoid tissue. In this tissue there is often an apparent structure, in that the spindle cells lie in whorls or form strands or rays, like those in a fibroid tumor. The giant cells often lie in the centres of such concentric masses. The tissue is well supplied with vessels, usually with thin muscle-walls, and contains more or less blood-pigment. In this kind of tissue spicules of bone occur in various proportions. They are usually devoid of structure, are homogeneous, with few or no bone-corpuscles. The sides are sometimes smooth, sometimes uneven, and occasionally have giant cells lying in spaces apparently excavated in them. These osteoclasts are precisely like the other giant cells described above.

The gelatinous marrow shows usually a very loose-meshed fibrillated or myxomatous mass, with round, spindle, or stellate cells, and contains varying proportions of the elements just described as entering into the red marrow.

The walls of the cysts are made up of dense fibrous tissue, with trabeculæ of bone, sometimes in considerable quantity.

The cartilaginous tumor in the upper part of the right femur is made

up of lobules of hyaline cartilage surrounded by fibrous tissue. The hyaline basis contains cells in large capsules; the centre of each lobule contains a softening cyst, the contents of which are sometimes colloid, sometimes finely fibrillated like young connective tissue, but without nuclei. In some of the lobules are small areas of calcification. The tumor has no special sheath, but is continuous with lymphoid marrow.

The dark-red tumor in the lower end of the left femur is composed largely of soft myxomatous or connective tissue containing osteoclasts. There are a few small bits of osteoid tissue, some of which are evidently undergoing absorption by the action of osteoclasts. There are areas of small-celled infiltration in many parts, and several hemorrhages. Under the periosteum are small trabeculæ of osteoid tissue, some of which have fibrous ends. Large quantities of blood-pigment occur throughout the mass.

The pubis has thin shells of hard bony tissue, sometimes perforated by absorption of the bone, but usually showing the original structure. This is irregularly decalcified and absorbed toward the inner part of the bone. The periosteum of the pubis is not thickened. The trabeculæ resemble those of the femur in being partly, or in some places wholly, decalcified. The marrow is fatty, with lymphoid infiltration in different parts. The pubis contains no osteoclasts and very few giant cells of any kind. Occasionally one, usually small and with few nuclei, can be found in the lymphoid tissue.

The cartilage of the acetabulum and the head and condyles of the femurs is usually smooth on the outer surface. In most places the decalcification has extended into all the trabeculæ continuous with the cartilage, but sometimes traces of the original structure can be found.

In the ribs decalcification has not been so extensive. The outer layer is usually complete, but decalcification extends irregularly into the compacta, and is advanced in the cancellous part.

Of the other organs, changes of importance were encountered in the kidneys, spleen, and ovaries.

Kidneys. The kidneys contain extensive areas of small-cell infiltration in the cortex, and an increase of intertubular tissue with few nuclei in the pyramids. The infiltrations in the cortex are of varying size and shape, sometimes long and narrow, corresponding to the medullary rays, at other times irregular.

The epithelial cells on the whole are well preserved. Some tubules, in different parts, are dilated.

The capsules of Bowman are frequently thick and fibroid, sometimes having only a moderate thickness; sometimes the whole capsule is converted into a fibroid mass. The glomerulus capillaries are usually well preserved, but in some glomeruli some or all the loops are fibroid.

The arteries occasionally show thickening of the intima.

In various parts, especially in the tubules in the pyramids, are concretions, filling or even dilating the tubules, but without evidence of irritation around them. Concretions are also found in the cellular infiltrations, but not always.

Spleen. The spleen shows chronic hyperplasia, with increase of trabeculæ, but without increase of the lymphoid areas.

Ovaries. The ovaries have very few follicles. There are a few small cysts. Most of the tissue is made up of short spindle cells, in strands

or rays, or firm connective tissue. There are few vessels. The vessels in the hilum seem normal.

The circumstances under which the patient was observed were so unfavorable for study that it is impossible to do more than mention briefly some of the points of interest involved.

The history of the case is not unusual, presenting as it does the common aspects of puerperal osteomalacia. In one respect the gross anatomical condition is interesting, namely, in the early and intense affection of the femurs. In the early fracture of the left one, and the prolonged lying in bed, we find the explanation of the absence of the typical osteomalacic pelvis—the beaked or heart-shaped pelvis. The difference in the consistence of the bones in the early and later stages, which led Kilian and others after him to distinguish *osteomalacia fracturosa* and *osteomalacia flexilis cerea*, is well illustrated by the early fractures and the gradual bending which took place during the last year of the patient's life.

Microscopically the changes found are those of a very advanced period, and bear out the ideas of recent investigators that the anatomical process is of a hyperæmic and inflammatory character. The inflammatory nature of the disease was asserted by Virchow (in his *Archiv*, Bd. iv., "Ueber Parenchymatöse Entzündung"). The theory is set forth by Von Recklinghausen in his exhaustive article, "Die fibröse oder deformirende Ostitis, die Osteomalacia und die osteoplastische Carcinose in ihren gegenseitigen Beziehungen" in the *Festschrift*, Rudolf Virchow zu seinem 71 Geburtstage, etc. (Berlin, Reimer, 1891). It is interesting to see, also, that although regeneration of bone has taken place to a marked extent, the new tissue has in turn broken down, so that many of the changes found represent late lesions, or degenerations, of a process itself secondary.

The large numbers of osteoclasts found might at first sight suggest the idea that the primary dissolution of the bone was due to these, a fact considered of great importance by some, denied by others. Careful examination, however, makes it certain that these bodies are in reality disposing of tissues of little value and probably predisposed to destruction.

Study of the bones in various parts makes it doubtful whether we can believe that the origin of the disease is to be found in inflammation or hyperæmia, and leads us back to the view, unsatisfactory as it is, that changes of a more recondite kind, either changes in metabolism or disturbances in the normal processes of breaking down and renewal of bone, lie at the basis of the disease.

As causes of the disease we find the commonest external conditions have been present in this case. The patient's own statement and that

of her relatives threw no light on the subject, but it so happens that my colleague, Dr. Vaughan, saw the patient in her own home on the occasion of an outbreak of malignant diphtheria in the neighborhood. He describes the condition of the house and its surroundings as damp and unhealthy in the extreme.

The more direct causes of the disease which have been supposed at various times receive no light from this case. Now that the old theories of lactic acid, CO_2, and diminished alkalinity have been given up from insufficient evidence or contradictory facts, two theories remain. One is that of infection by bacteria, claimed by Kehrer, Petrone, and Latzko, for which there is no evidence and little probability, except that lent by the undoubted endemic nature of the disease in some parts; but even this is not constant, since localities once affected sometimes cease producing cases, as Ribbert has shown.

The other is that of Fehling (which includes the possibility of an assisting action in CO_2 or in diminished alkalinity), viz., that the disease is a tropho-neurosis, due to reflex irritation from the ovaries. The remarkable results of castration in osteomalacia seem to confirm this theory, but, while the facts cannot be questioned, there is a growing tendency to question the theory.

In many cases in which recovery followed the operation no abnormality could be discovered in the uterus, ovaries, or vessels.

Seeligmann, who had such a case (*Berliner klinische Wochenschrift*, 1893, No. 44, p. 1077), sees nothing in castration beyond the prevention of pregnancy and menstruation; but this does not seem possible in view of the number of cases in which neither of these was involved. I should remark here that in my own patient sexual desire seemed abolished, in striking contrast to the usual rule in osteomalacia.

The excretion of lime salts, the disposition of which in some cases is obscure, was very striking in my case, and its effects on the kidneys and ureters and bladder very important clinically and anatomically.

The results of the examination of the blood are of interest in connection with those of others recently reported.

Neusser (*Wiener klinische Wochenschrift*, No. 3, 1892, p. 45) found an excess of eosinophilous cells in the blood in a few cases of osteomalacia. In a case of senile osteomalacia, however, there was no increase of eosinophiles, but the blood contained myelocytes. He suggested the possibility of there being two forms of osteomalacia, differing in the manner mentioned as regards the blood. In a case cured by castration Neusser saw gradual decrease of the eosinophile cells. Rieder, however, found in one case only 3.6 per cent. of eosinophile cells, which cannot be looked on as an excess (*Beiträge zur Kenntniss der Leucocyten*, 1892). M. Sternberg in two cases found no increase of eosinophile cells and no

myelocytes (*Zeitschrift für klin. Medicin*, Bd. xxii.). Tschistowitsch (*Berliner klin. Wochenschrift*, 1893, No. 38, p. 918) made careful examinations of the blood in osteomalacia and found no myelocytes. The eosinophilous cells varied greatly, but never exceeded 3.7 per cent. No effect could be observed on the number of these cells by castration. He found, however, that the lymphocytes were increased both absolutely and relatively, while the poly- and mono-nuclear cells were diminished. Tschistowitsch concluded, therefore, that besides the forms described by Neusser, in which there is an increase of marrow-elements in the blood, there is another form of osteomalacia with an increase of lymphocytes. I have been able to confirm the results of Tschistowitsch in my own case. The blood examined post-mortem shows 38 per cent. of lymphocytes, 52 per cent. of polynuclear cells, 9 per cent. of mononuclear and transition cells and less than 1 per cent. of eosinophile cells. There does not seem to me any reason for classifying cases of osteomalacia according to these peculiarities, as they are probably accidental, though it is important to have more observations on the blood, since it may be possible to learn something about the stage of the process as a whole from the alterations in the blood.

Diagnosis. Like all rare diseases, osteomalacia is frequently not diagnosed. Many text-books make it appear that in the later stages at least the disease cannot be mistaken. This assumes a greater knowledge of diagnosis than is possessed by a large number of physicians, and it seems desirable that the differential points be alluded to more frequently than they are in connection with diseases with which osteomalacia may be mistaken.

Even in Europe, in localities where the disease is not uncommon, cases are very frequently treated up to a very late period for other diseases. In my own case it seemed incredible that the nature of the affection had not been recognized before. Yet the patient was treated in a homœopathic hospital for other things at a time when the alteration in the right leg was progressing. I have strong reason for thinking that when the patient came to my clinic she did so at the instigation of a physician to get evidence, in order to proceed legally against the physician who set the first fracture.

Sternberg (*loc. cit.*) has recently called attention to the difficulty of diagnosis, and has given the important differential points to be sought for in distinguishing between osteomalacia and the diseases with which it is most easily mistaken. It is not necessary to quote these.

Osteomalacia is mistaken for some form of rheumatism more frequently than for all other diseases together. Much as the patient may think the pains rheumatic, a careful anamnesis and complete examination of the body would in most cases, except in the earliest stage, prevent error.

As regards treatment, the case teaches nothing new. The failure of the lime and the chloral was to be expected; they were given as experiments, with very little hope of doing good.

I regret very much that phosphorus was not given a more thorough trial. Had I known of the result obtained by Sternberg (*loc. cit.*) I would have given the remedy in large doses, but in the light of the earlier reports I did not feel encouraged to continue it after I found the first administrations badly borne.

Phosphorus and castration must be looked on as the chief remedies in the disease, the indication for the latter being especially the possibility of conception or the existence of pregnancy and need of Cæsarean section.

Osteomalacia in North America. The peculiar distribution of osteomalacia in various parts of Europe is such as to suggest local causes and led me to examine the history of the disease in America (North). Cases of "mollities ossium," "malacosteon," "fragilitas ossium," and "osteomalacia" have been frequently reported in the medical journals. I have examined all those under various headings in the *Index Catalogue* and the *Index Medicus*, but find that only a small number can be considered as genuine cases of osteomalacia. Most of them are cases of osteomyelitis, caries, tuberculosis, sarcomatosis, cancer, or ragility.

The first report was made by J. W. Tenny, in 1839 (AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 1839, xxvi. p. 506), under the title, "A Case of Mollities Ossium." The patient was a married woman of forty-three, the mother of five children, eighteen months past the menopause, living in Webster, Mass. The disease lasted two years, during which time the bones became so soft as to be easily bent. Autopsy showed changes similar to those of osteomalacia.

In 1861 W. H. Lamme, of Centreville, Ohio, reported "A Case of Mollities Ossium" (*Cincinnati Lancet and Observer*, 1861, vol. iv. p. 215) in the person of a married woman of sixty-three, the mother of several children. Illness lasted for ten years, with progressive deformity and softening of the bones of the lower extremities and severe pains. The bones were "as soft as bags filled with hair." No autopsy.

N. Dalton reported a case seen in Ohio, in 1860 ("Arrest and Cure of a Case of Mollities Ossium by the Use of Phosphate of Lime and Phosphoric Acid," *Trans. Ohio Medical Society*, Cincinnati, 1863, xviii. p. 67). The patient was a female, seventeen years old, unmarried. She was ill two years, with progressive softening and deformity of the bones of the pelvis, ribs, clavicles, cranium, and legs, with intense pain and spontaneous fractures. In this case the urine contained "a large quantity of whitish-gray deposit equal to one-third of its volume." Dalton found this urine contained over eleven grains of earthy phosphates in two

ounces. Under the treatment indicated in the title the bones became solid and the excretion of lime ceased.

Joseph Jones has reported the case of a white girl who died at eighteen years with a condition resembling osteomalacia (*Medical and Surgical Memoirs*, by Joseph Jones, New Orleans, 1876, vol. 1). The patient lived for a time on an island in the Ohio River in extreme poverty and most unfavorable hygienic conditions. From the age of five there was progressive softening of the bones, with great pain.

Bolles reported a case of "Remarkable Fragility of Bones" (*Boston Medical and Surgical Journal*, 1871, vii. p. 181), which was probably one of osteomalacia. The history is incomplete. Multiple fractures from slight causes, with union and breaking down of callus, were observed for two years after the menopause in a married woman of forty-six.

The word osteomalacia first appears in connection with a case reported by Ellis in 1878 (*Boston Medical and Surgical Journal*, 1878, xcviii. p. 5). This was the case of a man of fifty, who died after an illness of ten months' duration, with fractures, pain, etc. It does not seem certain that this was a case of osteomalacia, though the reporter could find no evidence of "cancer, caries, or leukæmia."

In 1883 Stone reported a "Case of Osteomalacia with Autopsy" (*Boston Medical and Surgical Journal*, 1883, cix. p. 220). Married woman of fifty-five years, mother of six children, had rheumatic pains, followed by progressive softening of bones, with fractures and deformity, lasting four years. Autopsy showed characteristic changes.

In 1887 Lamb, of Washington, reported a case of osteomalacia (*Journal of the American Medical Association*, 1887, viii. p. 493). Woman aged sixty-eight, single. Ill twenty-one years, with extreme pain in legs, weakness, "drawing-in pains," softening and deformity of bones. Autopsy.

Wheaton reported the case of a single woman of thirty (?), still living at the time of the report, who for four years had softening of the bones with deformity and fractures. The urine was sometimes milky, containing an excess of phosphates (*Northwestern Lancet*, 1891, p. 389).

Wheaton refers to a case in the care of Dr. Briggs, of St. Paul, which does not seem to be reported otherwise.

Woman of thirty-five years, married. After the birth of her fourth child softening and deformity appeared in the spine and pelvis. Ovariotomy was performed, but the disease continued to progress.

The case of French (*Northwestern Lancet*, 1891, p. 413) does not seem to be one of osteomalacia, but rather of malignant disease. The case of Russell (*Cleveland Medical Gazette*, 1892, vii. p. 471) also seems doubtful.

Finally, in 1892, Lamb gave the history of a case, the bones of

which are in the Army Medical Museum (No. 10,010) (*Journal of the American Medical Association*, 1892, xviii. p. 188). Female, single, aged sixty-nine years. Following acute arthritis there were progressive deformity and softening of the bones, lasting twenty-six years. The autopsy showed traces of old pelvic inflammation.

Excluding the doubtful cases of Ellis, French, and Russell the total number of those reported is only ten; all of the cases were females and whites.

Three of the cases occurred in Massachusetts, two in Ohio, one on an island in the Ohio River, two in Minnesota, one in Virginia, and one in the District of Columbia. All the patients seem to have been of American birth.

Almost nothing is said of the family history. In four cases the environment is not mentioned; in three cases it was considered good. One lived in great poverty on a low island subject to overflow; another lived very sparingly; and in the third the disease began after a period of exposure and privation while nursing in the army.

Concerning the previous history of the cases very little is said. In four it was stated to have been good; one was chlorotic; another had prolonged malaria; and several had histories of rheumatism or arthritis aside from that connected with the disease. In five of the cases the subjects were single and had borne no children. In four the disease began after the menopause; all of these cases had borne children with apparently normal deliveries and recoveries, all of them having large families—five to ten children. The one puerperal case occurred at the age of thirty-five after the birth of the fourth child. In the chlorotic patient the disease seemed to increase in severity at the time of the menstrual flow; in the case of Jones, menstruation was long delayed and only established under treatment.

The duration of the disease varied from two to twenty-six years. The longest duration was observed in the oldest cases. Four of the cases were living at the time of the report; in three of these the disease had lasted about two years; in the other the duration was not given. Of the 7 fatal cases 1 lasted two years, 2 four years, 1 ten, 1 thirteen, 1 twenty-one, and 1 twenty-six. During the greater part of these periods the patients were helpless in bed.

In all cases the disease began with rheumatic pains, so that a diagnosis of rheumatism was usually made; in one case the diagnosis was influenza. The intense and deep-seated pains began usually in the lower extremities, and in all but one case form a striking feature of the disease. These pains are described as "crushing," "drawing," etc., and were increased during bad weather. Associated with the pains were progressive weakness; fractures from slight causes, usually not uniting; increasing softness and deformity of bones; and finally complete help-

lessness. Appetite and digestion were usually good; in one case obstinate constipation; the mind remained clear, and nervous symptoms were not marked. In three of the cases dyspnœa from pressure upon the thoracic organs was prominent as a late symptom. Death occurred usually from exhaustion.

The condition of the urine is mentioned in but five cases; in one it was said to be normal; in three increased in amount and depositing a greatly increased sediment of phosphates, in one case one-third of the volume; in the other case it was "loaded with urates" (?).

The blood was not examined in any of the cases.

In four cases only was an autopsy held. In all of these there were great deformity of the bones, atrophy and fatty degeneration of the muscles. The bones of the extremities, pelvis, and spine were so softened as to be easily cut or crushed; in some places bone was completely absorbed and no trace of it found. The compact portion was greatly thinned and softened, the medullary spaces widened and the marrow increased, dark-red "like coagulated blood," easily cut, consisting of "blood-cells and vessels," "fat-cells and free fat," or of "plates and fibres loosely held in a whitish mass of fat or gelatinous matter;" some portions filled with "liquid fat."

No tests were made for lactic acid in the bones or urine.

In one case the ovaries were normal, in two they were atrophied, and in one case not mentioned.

In two cases small calculi were found in the kidney.

This summary shows that the general features of osteomalacia were present in these cases, although they differ in many respects from those observed in other countries. Gelpke, in his monograph on the *Osteomalacia in Ergolzthal*, near Basel (Basel, 1891), states that in countries where osteomalacia is not endemic the non-puerperal forms are seen more frequently than puerperal cases, a point which Ribbert ("Anatomische Untersuchungen über die Osteomalacia," *Bibliotheca Medica*, Cassel, 1893) questions, but which the cases so far reported in this country seem to bear out.

A CONSIDERATION OF THE VASCULAR MECHANISM OF THE NASAL MUCOUS MEMBRANE AND ITS RELATIONS TO CERTAIN PATHOLOGICAL PROCESSES.

By Jonathan Wright, M.D.,
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The blood supply to the turbinated bodies possesses an interest for the rhinologist due largely to the bearing its proper appreciation has upon his comprehension of the pathological lesions and clinical phe-

nomena in the various arbitrary divisions of rhinitis. Whatever may be the exact anatomical inter-relation of arteries, capillaries, veins, and venous sinuses, it is evident that they cannot overcome the elastic resistance to their dilatation without some arrangement for checking the venous return. There are no specially adapted muscles to compress a few veins, as in the penis; there is no tunica albuginea to exert compression.

In studying the subject it will be necessary to describe shortly the vascular anatomy of the turbinated bodies. Zuckerkandl has rendered this task a comparatively easy one.

The larger arterioles well supplied with muscular coats lie in the deepest layers of the mucous membrane close to the bone. They give off branches which supply, by a network of capillaries, the periosteum, the glands, and the epithelial layer of the mucous membrane. These capillaries are collected into the veins, which dilate into venous sinuses, the larger lacunæ of which are the deeper, the superficial lacunæ or "cortical network" communicating with them. These lacunæ again empty into the veins which accompany the primary arterioles into the periosteal layer.

Zuckerkandl says he has never seen the arteries emptying directly into the venous sinuses. The same was said for a long time of the corpus cavernosum of the penis, but they were finally conclusively shown to do so, and I am not convinced that this does not occasionally take place in the erectile bodies of the nasal mucous membrane, though I have thus far been unable to trace the connection between the two.

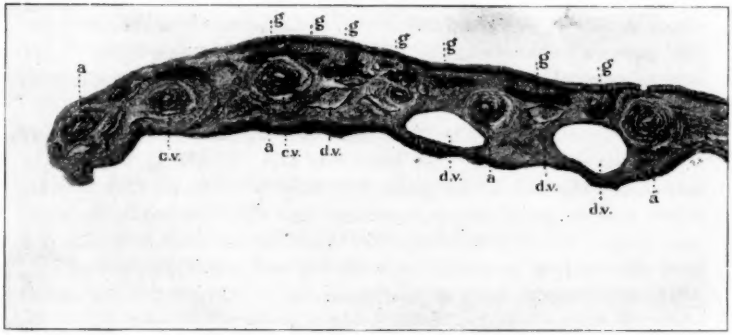
The capillaries, usually at least, do not empty directly into the venous sinuses nor into the radical veins accompanying the arteries. They are usually seen collected first into veins. The smaller veins of the periosteal layer empty directly into the radical veins accompanying the arterioles.

It is a matter of the greatest difficulty in this country, even in New York, to obtain adult heads fresh enough post-mortem, which may be opened and the nasal mucous membrane removed for microscopic study. Infants, stillborn or dying shortly after birth, may be easily obtained, but the erectile tissue (the venous sinuses) does not develop fully until near the time of puberty. It is possible in the "dead-house" to saw off the inferior turbinated bones through the nostrils in adult subjects, but in this climate the microscope will usually reveal a pathological condition of the mucous membrane. In animals the vascular arrangement differs in many respects from that of man. The sheep has no erectile tissue. The calf has cavernous sinuses on the posterior border of the septum which more nearly resemble the corpus cavernosum of the penis in having a thick external tunic and no muscle-fibres in the walls of the sinuses.

Nevertheless, by comparing all these different conditions the probable mechanism of the blood-supply in the highly evolved nasal mucous membrane of man becomes pretty evident. The radical arteries and veins pass through various bony canals into the nose, as the large spheno-palatine foramen and smaller foramina in the ethmoid. The artery will evidently compress, when dilated, its accompanying vein against the bony walls, thus letting in more blood and limiting the outflow. Contraction of the artery acts in the inverse sense. This arrangement has been described for the blood-supply of the marrow of the long bones.

There is a similar mechanism, as the arterial branches with their veins lie in the deep or periosteal layer of the mucous membrane.

Fig 1.



Nasal mucous membrane of sheep. × 10
a. Artery. g. Gland. d.v. Dilated vein. c.v. Closed vein.

Fig. 1 shows very clearly how this occurs in the sheep. You will observe that many of the large veins lie between the very muscular arteries and the firm periosteum at the level of this particular section. Of the thirty or forty sections examined, this arrangement was evident in so many pairs that it is fair to presume that at some one or more points each radical artery and vein stand in such a mutual relation that an increase in the diameter of the artery must result in an encroachment upon the lumen of the vein without entirely closing it. While this drawing is from the mucous membrane of the sheep, the same arrangement, by careful study, will frequently be found in that of man; but, owing to the very much more complex and irregular course of the vessels, it does not present such a striking and convincing illustration.

There is such a complete anastomosis of the superficial veins with one another, with those of the skin at the edge of the nostrils, with the veins

of the dura mater and of the orbit, that this obstruction to the venous return probably exerts its dilating tendency only or chiefly upon the *deep* network of the erectile bodies. It does act, however, upon them

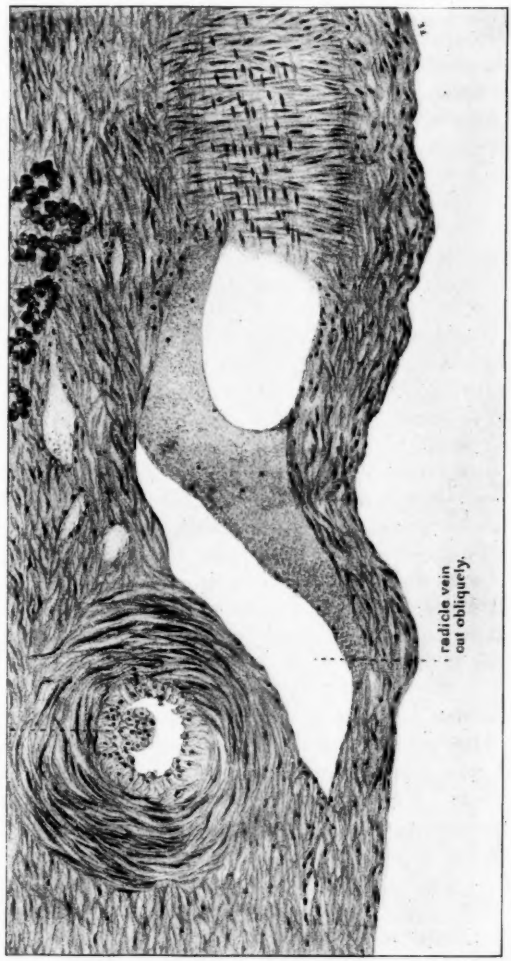


Fig. 2. Deep layer of nasal mucous membrane of sheep. × 300.

as the supply and escape valve to the cavernous sinuses, and stands in the place of the muscles which compress the radical veins of the penis. As Zuckerkandl has said, after a study of the microscopic structure of the nasal mucous membrane, one is impressed with the large amount of muscle-fibre with which its various elements are supplied. The walls of the larger arterioles are very thick, while some vessels with lumina no larger than those of the larger capillaries are supplied with well-developed circular muscle-fibres. Still more unusual is the amount of muscular tissue in the walls of the veins. In Fig. 2, from the same series of sections as Fig. 1, you will see a high-power drawing of a radical vein which happens to be cut obliquely so as to show perfectly its circular fibres. Comparing them with those of the adjacent artery, which is cut more squarely across, you will observe that they are very much more scanty, but, nevertheless, sufficiently plentiful to exert considerable influence upon the lumen of the vessel. As you look at this drawing the question will arise whether the contraction of the muscle-fibres of the vein is synchronous with those of the artery. You will observe that the artery, even in its contracted state, encroaches on the walls of the vein, which is evidently dilated, as are many of the veins in Fig. 1.

This is a point which, while very interesting, is not as yet clearly explained by the physiologist. Even if they do contract and dilate synchronically, the pressure of the dilated artery would sufficiently narrow the lumen of the relaxed vein. In contraction of the artery, on the other hand, the venous fibres would tend to prevent the excessive dragging apart of the venous walls and the over-engorgement of the vein. In man we have these same muscular veins receiving the blood from the venous sinuses, the walls of which are themselves plentifully supplied with muscle-fibres. The areolar tissue in the neighborhood of veins and venous sinuses is also in man more or less plentifully supplied with muscle-fibres. This richness in muscle-fibre is the arrangement which supplies the place of the tunica albuginea of the penis in driving the blood out of the tissues when the gateways of the radical veins are opened.

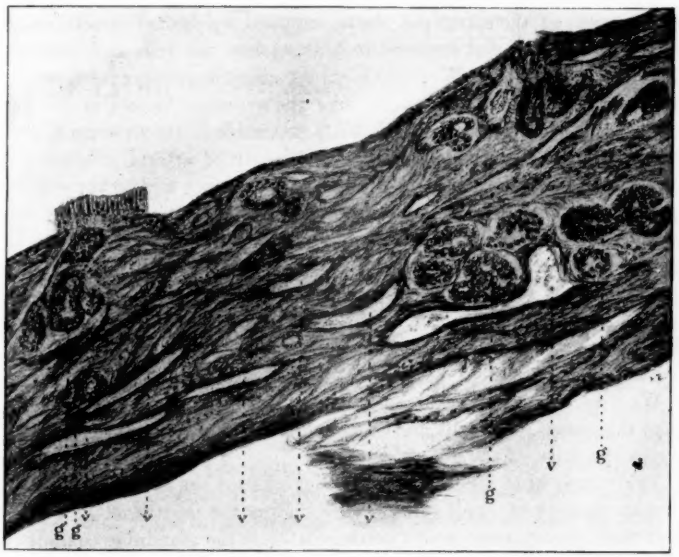
Before leaving this part of the subject I cannot refrain from wandering a little into the domain of pathology. The venous sinuses, as we have seen, depend largely for their expulsive power upon their muscular walls. Now we find in chronic rhinitis the walls of these vascular spaces very much thickened by the overgrowth of non-elastic fibrous tissue of a low grade of development. This must manifestly interfere with efficient contraction of the muscle-fibres. In the hypertrophy of these bodies we have, therefore, not only a dilatation of the lacunæ but a paresis of their walls.

Atrophy evidently has ordinarily, as its antecedent, the gradual elim-

ination of the muscular element and the encroachment upon the vascular spaces by this fibrous hyperplasia, which itself finally becomes to some extent absorbed, leaving as a thin covering to the shrunken turbinated bones a membrane deprived of its two essential elements, the glands and the venous sinuses.

Usually, however, this process is arrested before it reaches these extreme limits. Is it not reasonable to conjecture that we may find in this an explanation of the cause of atrophic rhinitis apparently beginning in so many cases about the time of puberty? This fibrosis, beginning

FIG. 3.



Nasal mucous membrane from septum of infant. × 50.
a. Periosteal layer. v. Radicle vein. g. Gland.

in childhood as the result of inflammation of a low grade, must tend to prevent the development, at or near puberty, of the venous sinuses. For it is probable that, normally, this ectasia of the bloodvessels, resulting in the formation of the nasal erectile tissue, is accomplished by engorgement due to the excitability of the sexual apparatus at that time. This does not explain all the phenomena of this puzzling nasal affection, but it gives us a hint that may be amplified into more satisfactory knowledge by the study of the life-history of the glands of the nasal mucous membrane from infancy to old age. By the use of the cautery in the hyper-

trophy of the erectile bodies we destroy some of the vascular spaces. We do not restore the efficiency of the muscular apparatus; on the contrary, by inducing the formation of the scar we favor the tendency to fibrosis. This is evidently the reason we occasionally see marked atrophy of the mucous membrane after cauterization and other intranasal operations.

To return to normal histology: There is still another element which is apparently important in the mechanism of the blood-supply. In Fig. 3, a drawing taken from a section of an infant's nasal mucous membrane, you observe veins compressed between the parallel fibres of the periosteal layer and the elastic fibres and glands external to it. It becomes evident here, as in the case of the radical artery and vein, that engorgement of the superficial tissues supplied by dilated arterial twigs will bring an increased pressure to bear against the vein and obstruct the outflow of blood. Where this arrangement is most marked, as it is in many places on the septum, we miss the abundant muscular element in the walls of the veins. A certain amount of elastic pressure is here always present, but it is increased by the results of arterial dilatation.[1]

In the distribution of the capillaries to the surface and to the glands, the endothelial wall of the capillary is in close apposition to the epithelium of the surface and of the glands. Free nuclei may frequently be seen passing through the epithelial layer. This is especially noteworthy in the so-called olfactory region. The nuclei having no power of locomotion when deprived of the cell-body, but being simply recognizable cell-detritus, we must suppose that they are carried by the exudation of the watery part of the blood.

We may, therefore, get a transudation of serum to the surface directly from the vessels, especially in the olfactory regions, without necessarily the intervention of the glands.

This brings us to another point. Zuckerkandl has lately described a special network of small veins so surrounding the mouths of the glands that their engorgement would necessarily close the glandular conduits.

Now these two points make a certain clinical phenomenon clear to us. The first stage of a coryza, after the somewhat problematical one of vascular contraction, is that of vascular engorgement of the erectile bodies leading to nasal occlusion. Now, with the bloodvessels all full, and with the stimulation of the glands, we should expect the secretion of mucus to be discharged almost coincidently with the congestion. As a matter of fact, we all know that for the first few hours even watery secretion is scanty, and for the first few days the discharge consists very largely of nearly clear serum. It only begins to thicken with mucus when the

[1] It is singular that by far the greater number of growths on the septum are so-called angeiomata. They probably have their origin in chronic rhinitis, which has resulted in a dilatation of the bloodvessels.

vascular tension relaxes. Evidently, then, the congestion of these veins encircling the glandular outlets must close the latter and prevent the escape of their contents. The watery secretion of the first stage we could account for by transudation directly from the bloodvessels through the areolar tissue and the surface epithelium.

The contraction of the smooth muscle-fibres and of the elastic fibres of the stroma contributes to the collapse of the venous sinuses, the gateways of the radical veins being opened by the contraction of the encroaching arterioles. An expression of the glandular contents also follows, subsidence of the engorgement of the superficial veins having opened the mouths of the glands.

THE VALUE OF OPHTHALMOSCOPIC CORNEAL IMAGES.

By Ernest E. Maddox, M.D.,
of Edinburgh.

In my previous paper on this subject it is said that the corneal reflection maps out with very fair precision the point of the cornea which is traversed by the visual axis.

This is true enough for practice, but requires qualification from a scientific point of view, for the precision is not absolute, and it remains to set the discrepancy on a definite basis.

The symmetry of the eyeball, though for a living organ truly marvellous, is not perfect, since the centres of curvature of its media are not in a mathematically straight line; yet they are sufficiently so to allow us to speak of an "axis of symmetry," in, or close to which each centre resides. The two extremities of this "optic axis" are the anterior and posterior poles of the eye, of which the former is the "summit," or mid-point of the cornea, a point equidistant from opposite parts of its circumference.

Before proceeding further, the shape of the cornea will require a little consideration. Its horizontal diameter is greater than its vertical, and even when free from astigmatism its shape is very peculiar, being evidently adapted to abolish spherical aberration. It is generally described as an "ellipsoid of revolution," the long axis of which is tilted at a slight angle with the optic axis.

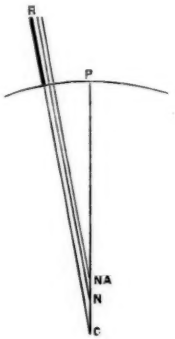
Sulzer,[1] however, has shown, by very careful measurements, that we may consider the cornea for a considerable area around the visual axis as approximately spherical, while only outside this area does it become ellipsoidal, and increasingly so toward the periphery. Since, in the

[1] La forme de la cornée humaine, 1892.

methods of using corneal images which I have advocated, the centre of the ophthalmoscopic mirror is always made the point of fixation for the patient, the corneal reflection takes place quite close to the visual axis, and therefore within the area which is spoken of by Sulzer as spherical.

We may feel quite free, therefore, without danger of appreciable error, to regard the portion of the cornea concerned in our test as if it were an absolutely spherical convex mirror, with a radius of curvature of about 7.8 mm.

Since the focal length of every convex mirror is half its radius of curvature, the principal focus of the cornea lies nearly 4 mm. behind its anterior surface, or almost exactly in the plane of the pupil. The corneal image is, of course, a virtual one, since the light does not really reach it, but is only reflected from the cornea as if it came from it.



Now let us imagine two straight lines, one (shown in the figure as C R) drawn from the centre of curvature (C) of the cornea, and the other drawn from N, which is the anterior nodal point; both meeting in the eye of the surgeon, and therefore nearly parallel. The first (C R) is the line which determines the position of the bright reflection from the cornea; it is around this line that the corneal image lies, at a distance of about 4 mm. behind the anterior surface of the cornea, and it, of course, coincides with the surgeon's visual axis when he looks at the corneal reflection. The other line, from N, is the patient's visual axis. Were the anterior nodal point and the centre of curvature of the cornea to coincide, the two lines proceeding from them would also coincide.

In that case the corneal reflection would map out the patient's visual axis with absolute precision. But, in fact, they do not coincide, as shown in the figure, the anterior nodal point being only 6.968 mm. behind the cornea when accommodation is negative, and further forward still when accommodation is positive. When, as sometimes occurs in high myopia, the patient's visual axis coincides with his optic axis, then the line of

the corneal reflection also coincides with both, and the corneal reflection itself occupies the exact mid-point of the cornea. Under these circumstances alone does the corneal image exactly indicate the part of the cornea traversed by the visual axis. Under all other conditions the corneal image *exaggerates* the inclination of the visual axis by a definite ratio, the amount of which depends on the relative distance, behind the anterior surface of the cornea, of the anterior nodal point and of the centre of curvature.

The ratio between these two distances is, with negative accommodation, as 8 to 9, and with the fullest possible accommodation, as 5 to 6.

In the figure, N represents the nodal point in negative accommodation, and N A the same nodal point with fullest possible accommodation, and the lines drawn from each show that the exaggeration is greater during full than during negative accommodation. The corneal reflection, therefore, exaggerates the obliquity of the visual axis by at least one-eighth as much again. This, however, is very slight, and, being regular and in perfect ratio, only suits our purpose for clinical use all the better.

TUBERCULAR TUMORS OF THE LARYNX.

By J. Payson Clark, M.D.,
of Boston, Mass.;
Physician for Diseases of the Throat, Massachusetts General Hospital.

It is not my intention in this paper to discuss the usual manifestations of phthisis laryngis. Tubercular infiltrations of the epiglottis, the arytenoids, and the inter-arytenoid space, and the masses of granulation-tissue often resembling papilloma springing from tubercular ulcerations are characteristic appearances familiar to all who have occasion to examine the larynx frequently. These appearances, although they may be considered in a sense tumors, do not come under the title as it is here applied. Tubercular disease of the larynx appears, very rarely, to manifest itself in the form of smooth, rounded tumors, single or multiple, or in the form of papillomatous growths which are found, on microscopic examination, to consist of tubercular tissue containing generally the bacilli of tuberculosis, and accompanied often by no or only slight manifestations of pulmonary tuberculosis. All such cases, as far as I know, which have been published I shall briefly review, bringing out only the important points, report a case of my own, and endeavor to draw some conclusions which may be of value.

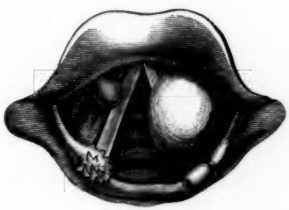
As early as 1866 Tobold appears to have recognized the existence of tubercular growths of the larynx, although Ariza (1877) is generally considered as having been the first to call attention to them. In the

case reported by the latter there was a tumor of the epiglottis which, on removal and microscopic examination, was found to be tubercular. Recurrence was rapid. E. F. Ingals mentions a case in which there was a distinct tumor, size of a split-pea, springing from the right arytenoid. There was evident pulmonary tuberculosis. The microscopic nature of the growth was not ascertained.

J. N. Mackenzie reports two cases observed *post mortem:* (1) Tumor of trachea, about 1½ cm. above bifurcation; dense, smooth, size of bean, covered with mucous membrane, and consisting microscopically of tuberculous nodules. There were tubercular cavities in the lungs. (2) Whole upper compartment of the larynx presented a mammillary appearance, due to the presence of small, smooth, dense nodular growths under the intact mucous membrane, microscopically tubercular. There were tubercular cavities in the lungs. Gussenbauer's case was a man, aged twenty-four years, suffering from dyspnœa and aphonia caused by a tumor of the larynx. A diagnosis of carcinoma (supported by microscopical examination) was made, and total extirpation of the larynx was performed. The patient died several months later, of pulmonary tuberculosis. Another histological examination of the tumor showed it to have been tubercular. Schnitzler reports three cases: (1) A young man had cough for a long time, hoarseness for several months, dyspnœa for a few weeks. The larynx contained numerous growths (size of a bean to that of a hazelnut), grayish-white, not ulcerated, arising mostly from the ventricle, and almost filling the larynx, having the appearance of a papilloma. Tracheotomy was performed for dyspnœa. The tumors were removed with the guillotine and found to consist microscopically of a collection of miliary tubercles; cure. (2) Man, aged forty years, with pulmonary phthisis. Larynx healthy, except a grayish-white tumor size of hazelnut from the posterior tracheal wall. Tracheotomy; death. No autopsy mentioned. (3) Patient with pulmonary phthisis; had a number of smooth, non-ulcerated tumors springing from the ventricles. No further details were given. Lermoyez's case was a man, aged forty years, having an enormous polypoid growth on the right vocal cord, causing attacks of suffocation for which tracheotomy was done; death. Autopsy showed tubercular infiltration of both lungs. Percy Kidd has reported four cases: (1) Male, aged fifty years, had winter cough for two years; for eight months increase of cough, with hoarseness and dyspnœa. Consolidation at left apex. Larynx contained a pea-sized, smooth, rounded tumor arising from the angle between the arytenoid cartilage and the ventricular band. A symmetrical tumor gradually appeared on the right side. Marked signs of pulmonary phthisis developed, from which the patient died eight months later. The tumors consisted of an aggregation of miliary tubercles containing numerous tubercle bacilli. (2) Male, aged thirty-seven years, had cough for one year with expectoration, and a few months later hoarseness and dysphagia. Physical signs of phthisis present in both lungs. There were ulcerations in the larynx and a tumor on the right aryepiglottic fold size of a small cherry, sessile, smooth, yellowish-white, and studded with bright-red points. Tumor was not removed, and became ulcerated later. The patient was lost sight of. (3) Male, aged thirty-two years, had cough for fourteen months, with expectoration and hoarseness; phthisis in both lungs; ulceration in pharynx and larynx. Patient died of phthisis pulmonalis. Grayish-pink tumor, size of pea,

consisting of groups of miliary tubercles, grew from posterior laryngeal wall. (4) Male, aged twenty-three years, with family history of phthisis; had pulmonary phthisis for two years. The epiglottis was ulcerated, with other signs of laryngeal tuberculosis. A smooth tumor, size of a small bean, sprang from the under surface of each ventricular band. Microscopic examination of one tumor showed it to be tuberculous. Foà found a small arborescent vegetation at the base of the epiglottis and on the vocal cords in the larynx of a woman who died of pulmonary phthisis. The growth contained giant cells and numerous tubercle bacilli. M. Schaeffer and D. Nasse report the case of a man, aged thirty-three years, hoarse for several months. A tumor grew from the arytenoid region, and covered the posterior third of the left vocal cord. It was the size of a bean, irregular but smooth, and was removed with cold wire-snare. There were physical signs of phthisis at right apex and bacilli in sputum. The tumor was found to be tuberculous on microscopic examination. The patient died in about one year, of phthisis. Dehio's case was a man, aged forty-one years, with no tubercular or syphilitic symptoms, with intermittent hoarseness for over a year and dysphagia for several months. There were no signs of lung-trouble. A tumor of the left ventricular band almost concealed the left vocal cord, and was removed by laryngotomy as malignant. It was found to be tubercular, containing giant cells and tubercle bacilli. The patient died seven weeks later, of pulmonary tuberculosis. Arthur Hennig's case is interesting: Male, aged fifty-two years, heavy drinker; no heredity; had been hoarse for twelve years. When examined was suffering from attacks of coughing, with dyspnœa and aphonia. There was dulness at right apex, prolonged expiration, and moist râles. There was a tumor, size of a filbert, covered with apparently normal mucous membrane concealing the posterior two-thirds of the left vocal cord and apparently arising from the left ventricular band. A smaller growth was over the right ventricular band, and on the right arytenoid a small

FIG. 1.



Hennig's case.

condylomatous growth. (See Fig. 1.) The larynx was otherwise normal. Laryngotomy was performed, the tumors removed with the Paquelin cautery, and the right arytenoid cauterized. The growths were microscopically tubercular. The patient's condition was good for two weeks; then cough began, with profuse expectoration. An abscess formed in the neck, and the patient died thirty-seven days after the operation. The autopsy showed extensive chronic tuberculosis of both lungs, the left ventricular band ulcerated away, and an ulcer at the site of the smaller tumor. Gougenheim and Tissier's case was a young man. At

the base of the epiglottis there was a lobulated tumor nearly filling the larynx, causing increasing dyspnœa and necessitating tracheotomy. Lungs were apparently negative. The laryngeal growth was removed by forceps, and found to be tubercular. After two years the tracheotomy tube was removed. Patient's general condition remains satisfactory.

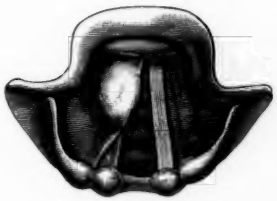
J. B. Marty's case was a man, aged thirty-two years, showing a reddish, firm, pedunculated tumor of the right ventricular band. He had been hoarse for seven years. The lungs were tubercular. Under treatment with the galvano-cautery, after unsuccessful attempts to remove it with forceps, the tumor disappeared. Cartaz reports three cases: (1) Woman, aged thirty-three, no heredity; general health good, was hoarse for two and a half months. The vocal cords were found slightly reddened without ulceration, and a rounded reddish-gray tumor, the size of a small hazelnut, in the posterior third of the right vocal cord. This was removed with forceps and found to contain granulation-tissue, giant cells, and numerous bacilli. A month later there was an ulcer at the site of the growth, and the vocal cords were infiltrated and ulcerated. The lungs soon showed signs of phthisis, of which the patient died a year later. (2) Man, aged thirty-five, became hoarse after an attack of bronchitis. Grippe some months later aggravated the hoarseness. A grayish-pink tumor the size of a pea was visible on the anterior part of the left vocal cord. Both cords were red and thickened. There was prolonged expiration at right apex. Fragment of tumor removed for examination was lost. The patient died of hæmoptysis six months later. (3) Young woman with tubercular antecedents had cough and hoarseness for one year. A grayish-red conical tumor was seen in posterior commissure of larynx, which was otherwise normal. Dulness and prolonged expiration were found at right apex. The tumor was removed with forceps, and consisted of granulation-tissue containing giant cells and tubercle bacilli. Arpad A. Gerster's case was a man, aged twenty-nine, with physical signs of phthisis for a number of years, with dysphagia for nine months, and later increasing dyspnœa and hoarseness. In the larynx was a tumor of the size and shape of an almond, smooth, and covered with apparently normal mucous membrane occupying the posterior half of the left arytenoid and ventricular band, almost concealing the glottis. After thyrotomy the tumor, with part of the left vocal cord and arytenoid, was removed. The wound healed by first intention, but two and a half months later a tuberculous fistula formed, and the lungs grew worse. The tumor was microscopically tubercular.

Dundas Grant's case: Man, aged twenty-eight, hoarse for six years following laryngitis; had a pedunculated growth from the right vocal cord and a sessile growth in the inter-arytenoid space. The epiglottis was red and œdematous, also the ary-epiglottic folds and the vocal cords. There were ulcers on the right vocal cord and ary-epiglottic folds, but no physical signs of phthisis pulmonalis. The patient died of asphyxia. Coexisting pulmonary disease was found. Microscopic examination of growth is not mentioned.

Avellis has written a very thorough article on this subject. He reports thirteen cases from the clinic of Moritz Schmidt in Frankfort. I have verified all but a few of his references, and have found his paper of great assistance in preparing my own. The following are brief abstracts of his cases: (1) Man, aged twenty-five, was hoarse for several

months. In the larynx was a smooth, red growth, size of half a split pea, from under surface of the right vocal cord, having the gross appearance of a fibroma. On removal and microscopic examination it was found tubercular. Six months later there were serious tubercular changes in the larynx, and three months after this the first evidence of phthisis in both apices was discovered. (2) Woman, aged forty, had tumor covered with normal mucous membrane growing from right ventricle. Lungs were apparently normal. Tumor was removed with curette and lactic acid applied. Growth found microscopically tubercular. A year later the larynx was normal. (3) Man, aged thirty-two, hoarse one year, had a polyp on anterior third of right vocal cord; removed with forceps and found tubercular. Larynx was otherwise normal. Seven months later there were ulcerations in the larynx and evident tuberculosis of lungs. (4) Woman, aged nineteen, hoarse nine months, had red, smooth tumor of ventricular band almost covering right vocal cord (see Fig. 2), beginning ulcer on the posterior laryngeal wall, and signs of phthisis at right apex. The greater part of the tumor was removed

FIG. 2.



One of Avellis's cases.

with laryngeal forceps. The rest gradually disappeared and the ulcer above mentioned healed. Later signs of phthisis developed in the left apex, the general condition grew worse and the tumor recurred. This was removed. The patient was lost sight of. (5) Woman, forty-five years of age, hoarse for six months; showed a reddish-gray cauliflower growth under anterior part of glottis and phthisis in both apices. Tumor removed with forceps and found microscopically tubercular. One year later tubercular ulceration appeared in the larynx. Tracheotomy was required for great subcordal swelling. (6) Does not seem to belong to this group, and is omitted. (7) Man, aged thirty-three years, had for a year previous phthisis at both apices. In larynx was a nodulated growth covered with mucous membrane, rising from the right ventricle and almost covering the right cord. This was removed with the galvano-cautery loop. The wound healed. Six weeks later there was infiltration of the ary-epiglottic folds and ulceration of the epiglottis. Three months later the patient died of phthisis pulmonalis. (8) Man, aged eighteen years, had in larynx two tumors size of pea in the left ventricular band, found to be tubercular on microscopic examination. The larynx was otherwise normal. Lung-symptoms first appeared four months after the growth was seen. (9) Man, aged twenty-seven years, had dry pleurisy for two years, hoarse for two months. Left apex infiltrated. Tumor on anterior part of right ventricular band, partially removed with forceps and found tubercular. Three months later there

was no sign of the tumor. Patient had another attack of pleurisy, and was lost sight of. (10) Woman, aged twenty-three years, hoarse for three months, had tumor under left vocal cord. A piece removed was found tubercular. Dulness and râles at left apex. (11) Man, aged twenty-four years, hoarse three months, had tumor size of half a pea on anterior part of right ventricular band. Larynx otherwise normal. Dulness at right apex, tubercle bacilli in sputum. Tumor removed, but swallowed by patient. (12) Woman, aged fifty-one years, cough for many years, hoarseness two years; had for six weeks dyspnœa and dysphagia. Occasional râles, but no dulness in lungs. Smooth tumor with broad base on left vocal cord removed with cold wire snare, and found tubercular (giant cells and bacilli). (13) Woman, aged nineteen years, with slight pulmonary phthisis; had some hoarseness caused by a tumor of the ventricle, and ventricular band covering half the vocal cord. Removed with forceps and found tubercular. General condition improved. Larynx sound one year later.

Trêkaki's case was a syphilitic man, aged thirty-five, with no tubercular family history. There was gradually increasing dyspnœa. Laryngological examination was impossible. The lungs were apparently normal. General condition was good, except for slight elevation of temperature. Patient died of sudden asphyxiation. The autopsy revealed a sessile tumor of the left ventricular band almost completely obstructing the larynx. The tumor was a tubercular infiltration of the muscle of the ventricular band. There were tubercular nodules in the trachea. Schwartz reports a case in which there were vegetations in the posterior third of the right vocal cord, which on microscopic examination were found to be tubercular. The patient died later of pulmonary phthisis.

Heryng reports three cases of hemispherical white sessile tumors on the false cords posteriorly. The larynges were otherwise normal. Phthisis of the lungs was beginning. In one case the tumor was removed and found to contain some small tubercles and giant cells.

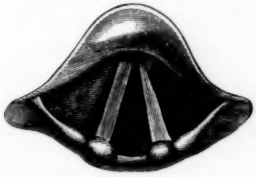
The case which I have to add to the above is the following: Mrs. F., aged thirty-one years, with no tubercular family history, was first seen by me on May 9, 1893. At ten years of age she had a severe attack of cerebro-spinal meningitis. Since then she has always been well until three years and a half ago (November, 1889), when she took a severe cold from being in a damp house. This cold was accompanied by laryngitis. She has been hoarse ever since. The laryngeal growth was discovered two years ago and numerous unsuccessful attempts made at its removal. The patient did not wish to undergo thyrotomy, which one surgeon suggested as the only way to remove the growth. When first seen by me the patient weighed 120 pounds. She was a small woman, and looked in fairly good condition. She was quite hoarse, experienced some difficulty in speaking, and had occasionally some dyspnœa on exertion. Laryngological examination showed a smooth, sessile, dimpled growth, covered with mucous membrane, somewhat redder than the surrounding, springing from the left ventricular band and concealing during respiration most of the left vocal cord and part of the right. The larynx was otherwise normal except a slight injection of the vocal cords. Fig. 3 gives a fair idea of the relative size and appearance of the growth.

An eight per cent. solution of cocaine was sprayed into the larynx

and the growth removed with the cold wire-snare. The instrument used was Hooper's combined snare and écraseur, with a Schrötter tube and No. 4 piano-wire. I was fortunate enough, after only a very few trials at one sitting, to get the loop well around the base of the tumor. After tightening the loop a few turns of the écraseur were required to cut

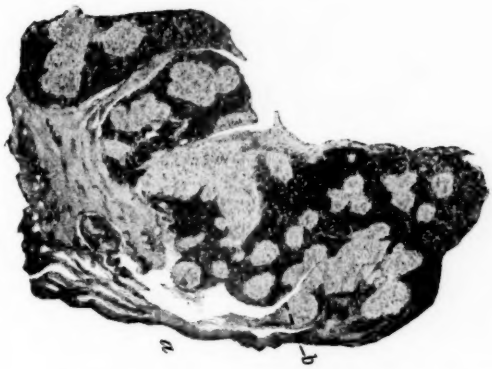
FIG. 3.

FIG. 4.



through the firm attachment. When this was done the growth was immediately coughed up. Hemorrhage was very slight. The growth was very firm, having the gross appearance of a fibroma. The wound healed quickly. Fig. 4 shows the appearance of the larynx the day after the removal of the growth. The patient was seen on March 12 and October 1, 1894, when the larynx still looked practically as in Fig. 4. On the later date the patient was in excellent health and weighed 145 pounds. Her voice is clear, but she says it gets tired if she uses it very much. A thorough examination of the lungs was entirely

FIG 5.



negative. Dr. W. F. Whitney very kindly made a microscopic examination of the growth, and reports as follows: "The sections are from an oval growth of irregular outline, about ten mm. by five mm. in diameter. The bulk of the growth is made up of series of minute nodules, extensively cheesy, and in which are scattered multinucleated bodies (giant cells). These nodules are separated by a zone of round-cell tissue of varying width. Here and there the contiguous edges of the nodules touch, giving thus a clover-leaf outline to the group. This

new growth is covered everywhere, except at one minute point, by a layer of stratified columnar epithelium, which in part lies directly upon it, and in part is separated by a narrow band of connective tissue. This last is very rich in bloodvessels with thick (arteries) and thin (vein) walls. There was also one bundle of nerve-fibres. The growth is a nodule of miliary tubercles growing in a submucous tissue."

Fig. 5 is a low-power enlargement of a microscopic section of the growth. The side bracketed and marked (*a*) was nearest to the surface of attachment. The reason that this side is covered with

FIG. 6.

mucous membrane is that the sections, although perpendicular to the surface of attachment, did not quite reach it, but cut through an overhanging portion of the growth. The portion inclosed in brackets gives a good idea of the diameter of the attached surface. Fig. 6 is a further enlargement of the tubercular nodule marked (*b*) in Fig. 5.

I have collected here the reports of 42 cases of laryngeal tumors. Of these, 13 are more or less incomplete; but of the 13 the majority were undoubtedly tubercular tumors. As far as I know, the only other writers who make any reference to the existence of tubercular laryngeal tumors are Mandl, Gottstein, and McBride. Gottstein says: "Tubercular laryngeal tumors are growths rising sharply from their surroundings, either solitary or two or more, rounded, of smooth surface, from the size of a pea to that of a hazelnut, microscopically consisting in part of thick fibrous tissue, in part of tubercles closely grouped. In the

tubercles are bacilli." McBride says: "In some rare cases the only manifestation of phthisis laryngea is the presence of *tubercular tumors*." Schwartz (*loc. cit.*) says: "Sometimes tuberculosis manifests itself under the form of veritable tumors projecting into the larynx, to ulcerate later. When not ulcerated they may be taken for tumors of a malignant nature, if there exist no other signs of tuberculosis."

Of the 29 cases in which the history may be considered practically complete and satisfactory, in 3 the tumor was not discovered until after death. In these 3 cases there was also pulmonary tuberculosis. Only 4 of the patients of whom the age is mentioned were over forty, and only 3 under twenty years of age. The affection is, therefore, more frequently one of middle life. Of the cases in which the sex is mentioned, 23 were male and 9 female. In these two particulars this variety of tuberculosis of the larynx coincides with the disease as it usually manifests itself in the larynx. According to Bosworth, in 500 cases of laryngeal tuberculosis reported by McKenzie, 356 occurred between the ages of twenty and forty; 365 were males and 135 females. In the 26 cases in which the growth was seen during life the lungs were tubercular at the time the growth was first seen in 17. Of the 9 remaining cases, 5 developed signs of phthisis pulmonalis later, leaving 4 in whom pulmonary signs could not be found several months to a year and a half after the removal of the growth. Five of the growths are described as having the appearance of a papilloma, while the others had the appearance already described in the quotation from Gottstein. In 28 cases the tumors were single, while in 6 there were two or more. The tumors were rarely ulcerated, and the mucous membrane covering them had generally a normal appearance. In color the growths vary from a pinkish-gray to a dark-red. They are generally firm, but occasionally soft. As a rule, they are sessile, but they may be pedunculated. Their most common sites are the ventricular bands, vocal cords, and ventricles. They have been also found on the posterior laryngeal wall, the epiglottis, arytenoids, and ary-epiglottic folds, under the anterior commissure, and in the trachea. They are apparently of slow growth, and may run a very chronic course. In many of the cases the tumor was known to have been in existence for a year or more, while in others the history of hoarseness for several months to several years may, perhaps, be taken as a fair indication of the length of time the tumor was in existence. The symptoms are hoarseness, often dyspnœa, and more rarely dysphagia, without pain, as a rule.

Are these growths to be considered primary or secondary? It seems to me that there is more than a strong presumption that they are secondary, a metastatic deposit from a primary focus elsewhere, probably in the lungs. The history of the reported cases would seem to bear out this conclusion: the fact that in most cases physical signs showed the

coexistence of pulmonary phthisis, while in others the physical signs developed soon after the growth was seen. In the few cases in which they did not develop a tubercular focus may, nevertheless, have existed, for it is a well-known fact that tubercular foci, which were never suspected during life, are found in the lungs at autopsies. And, finally, the fact that these growths are covered with apparently intact mucous membrane is a strong argument against a direct primary, local infection. Pathologically, these growths are generally made up of round-cell tissue surrounding tubercles, often cheesy, degenerated, and containing giant cells. Tubercle bacilli can generally be found.[1]

These growths may be mistaken for a fibroma, papilloma, or sarcoma. If there is coexisting phthisis pulmonalis, the probability is strong that the tumor is also tubercular. In the absence of pulmonary signs it is practically impossible, without microscopic examination, to make a positive diagnosis. It is more than probable that not a few cases reported as fibromata belong under this head. Indeed, it would seem advisable to examine microscopically all supposed papillomata, although this form of tubercular laryngeal tumor is apparently exceedingly rare. The unimpaired mobility and absence of pain would aid in a differential diagnosis from a malignant growth.

The main indications for operations are dyspnœa and dysphonia. These growths have been treated by various applications. They have been removed *per vias naturales* by means of the cold wire-snare, the forceps, guillotine, and galvano-cautery loop. They have also been removed after thyrotomy. On account of the firm character of these growths forceps are, as a rule, ill adapted to their removal. The best instruments would seem to be the cold wire-snare or galvano-cautery loop. In some cases a previous tracheotomy is required. In some, owing to the shape, size, or position of the growth, thyrotomy is necessary. The use of lactic acid or the galvano-cautery on the site of the growth after its removal, to destroy, if possible, any tubercular tissue that may remain, would seem to be indicated in view of the number of cases in which ulcers occurred after the removal of the growth. The reported cases seem to me to indicate that there is no danger of a reinfection of the organism from the setting free of bacilli from the growth, although there is room for a difference of opinion on this point from the fact that in a few cases the first physical signs of pulmonary tuberculosis developed very soon after the removal of the growth. To my mind this is probably simply a coincidence, the tubercular process, which had probably been slowly going on or resting quiescent for some time in the lungs, first making itself evident to physical examination at this time. Nor was there in any case an acute miliary tuberculosis such as might

[1] Dr. J. L. Goodale has kindly made a bacteriological examination of about fourteen sections from my specimen, but with negative results.

be expected to arise from a sudden setting free of a number of tubercle bacilli into the circulation. In a few cases the result of operation was brilliant, and in most there was great relief from t e local symptoms for a longer or shorter period.

In conclusion, I wish to thank Dr. W. F. Whitney for his careful microscopical examination of my specimen, and also for his kind supervision of the microscopic drawings, and Dr. W. D. Hall for preparing and mounting the microscopic sections.

References.

Ariza: Anfiteateo anatomico Español, 1877, p. 149; 1878, p. 135.
Ingals: Chicago Med. Journ. and Exam., 1879, vol. xxxix. p. 1.
Mackenzie, J. N.: Archives of Med., N. Y., 1882, vol. viii. p. 107.
Schnitzler: Wien. med. Presse, 1883, vol. xxiv. p. 446.
—— Wien. med. Presse, 1884, vol. xxv. pp. 1397-1461.
Kidd, Percy: Brit. Med. Journ., 1884, vol. i. p. 814.
—— St. Bartholomew Hosp. Reports, 1885. vol. xxi. p. 37.
Foà: Arch. per l. sc. Méd. Torino, 1883-84, vol. vii. p. 203.
Schaeffer and Nasse: Deutsch. med. Woch., 1887, vol. xiii. p. 307.
Dehio: Revue de Lar. d'Otol., etc., October, 1888.
Hennig: Berlin. klin. Woch., July 9, 1888.
Gougenheim and Tissier: Annales des mal. de l'Oreille, etc., July, 1888.
Marty, J. B.: Loc. cit., November, 1888.
Cartaz: La France Méd. et Paris Méd., March 12 and 14, 1889.
Gerster, A. A.: N. Y. Med. Record, April, 1889.
Grant, Dundas: Journ. of Laryng., July, 1891.
Avellis: Deutsch. med. Woch., August 6 and 13, 1891.
Trĕkaki: Annales des mal. de l'Oreille, etc., February, 1892.
Schwartz: Tumors of Larynx, Paris, 1886.
Heryng: Die Heilbarkeit des Lar. Phth., p. 42.
Bosworth: Diseases of the Nose and Throat, vol. ii. p. 609.
Lermoyez: Annales des mal. de l'Oreille, etc., 1884, vol. x. p. 183.

PALMUS.[1]

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It has been my fortune in the last few years to see a number of cases of muscular movements to which the French authors have given the name of *Tic Convulsif*. They were first described in 1885 by Gilles de La Tourette, under the caption of "A Nervous Affection Characterized by Motor Inco-ordination, Accompanied by Echolalia and Coprolalia."[2] The details of this description are as follows: Motor inco-ordination is the first symptom, beginning gradually without apparently influencing the general health. The face or the upper extremities are first affected, in the latter usually one-sidedly. It is first noticed that the fingers are

[1] Read before the New York Neurological Society, March 5, 1895.
[2] ἠκώ echo, λκλω to speak, and κοπρος obscenity, and κισρος indecent.

alternately extended and flexed, or that the shoulders are raised. At about the same time the muscles of the face become implicated, most often with incessant winking, or by one of the buccal commissures being actively drawn upward and outward, or by a contraction of the masseters, causing a grating of the teeth, or by a projection of the tongue, at the same time that this organ may sometimes be lacerated by sudden activity of the masseters. The muscles of the neck taking part in the movements, the head is alternately flexed and extended, and the sterno-mastoids incline it to one or the other side. The lower extremities soon share in the general disturbance, but the inco-ordination in them is somewhat different in that the movements are not limited to isolated muscular groups, as is the case in the parts that we have described, but extend over the entirety of the muscles of one or the other member, and sometimes over both. The patient stamps his foot, stoops or erects himself, or the movement may consist of a veritable jump. All these movements are very sudden and very rapid, and each first set of movements is quickly followed by further ones. During one of these series of movements the patient suddenly, at the time of a movement, gives vent to an inarticulate cry like "hem," "ah," which sound may be repeated several times. At times this cry may be articulate, consisting of a word which varies from patient to patient, and which has certain of the characteristics of an echo; hence the name *echolalia*. The *coprolalia* was regarded by La Tourette as pathognomonic, and consists of profane oaths or obscene epithets. This author regarded the affection as an eminently chronic one, and also as invariably hereditary. The French authors had their attention directed to the subject by the descriptions of two American authors—those of Beard upon "The Jumpers of Maine," published in 1880, and that of Hammond upon "Miryachit," a similar disease of the far Orient. Beard found that the jumpers of Maine did unhesitatingly whatever they were told to do. Thus, one who was sitting in a chair was told to throw a knife that he had in his hand, and he obeyed so quickly that the weapon stuck in a house opposite; at the same time he repeated the command given him, with a cry of alarm not unlike that of hysteria or epilepsy. When he was suddenly clapped upon the shoulder he threw away his pipe, which he had been filling with tobacco. The first parts of Virgil's *Æneid* and Homer's *Iliad* were recited to one of these illiterate jumpers, and he repeated the words as they came to him in a sharp voice, at the same time jumping or throwing whatever he had in his hand, or raising his shoulder, or making some other violent motion. It is related by O'Brien, an Irishman serving on an English naval vessel, that an elderly and respectable Malay woman, with whom he was conversing in an entirely unsuspecting manner, suddenly began to undress herself, and showed a most ominous and determined intention of stripping herself completely, and all because a

by-standing friend had suddenly taken off his coat; at the same time she manifested the most violent anger at what she deemed this outrage to her sex, calling the astonished friend an abandoned hog, and very properly begging O'Brien to kill him. O'Brien, furthermore, tells of a cook who was carrying his child in his arms over a bridge on a river, while at the same time a sailor carried a log of wood in like manner, and how the sailor threw his log of wood on an awning, amusing himself by causing it to roll over the cloth, and finally letting it fall to the bridge, when the cook repeated every motion with his little boy, and killed him on the spot. This *Miryachit* was observed in Malaysia, Bengal, among the Sikhs and the Nubians, and in Siberia, whilst Beard has observed it in Michigan as well as in Maine.

The French authors would have us consider all this complex of symptoms—namely, the sudden and rapid muscular contractions, the jumping, the tendency to imitation, the coprolalia, and the echolalia—as constituting one and the same affection, and to it they have given the name of *tic convulsif*. Inasmuch as I have found, for reasons that I shall endeavor to make plain in this paper, that the main symptoms of the affection are much more frequent than has hitherto been supposed, I have ventured to coin for it a new name. *Latah* and *Miryachit* are Malaysian and Russian names respectively, whilst *tic convulsif* either will be confounded in most Anglo-Saxon minds with *tic douloureux*, or else it conveys no meaning at all, because the word tic, which has a time-honored meaning in the French language, is unknown to ours. Moreover, the affection possesses more analogy with chorea than with any other affection, and I have, therefore, thought that it would be more proper to have it become known by a name derived from the Greek. With this end in view I have found ὁ παλμὸς, which is a good old Greek word used by Aristotle to describe palpitation or twitching of the heart, and I have simply Latinized it into Palmus, which medical men will have no occasion to confound with the Greek words ὁ πάλμος, "the king," the more especially as the accent in the latter is on the first syllable, whilst in my Latinized word Palmus it should be upon the last. The adjective is palmodic, from the Greek παλμωδης. It is far from being proved, however, as La Tourette supposed, that these five symptoms—palmus, or convulsive tic, tendency to imitation, jumping, coprolalia, and echolalia—are necessarily found together. In a very interesting monograph, published in 1893 by Noir, upon these tics, he has made, by observations among what the French call the degenerate, the imbeciles and idiots, a most valuable addition to our knowledge, at the same time that the existing literature has been carefully gleaned; and in this pamphlet it is demonstrated that all these symptoms may be observed in some patients, whilst in others the palmus alone is seen; in others, again, the echolalia or the coprolalia; whilst I have never observed the jumping

or the coprolalia in any of my cases. Noir divides palmus into the following types:

1. The simple co-ordinated tics, most often rhythmical;
2. The slight co-ordinated non-rhythmical tics;
3. The co-ordinated tics of the blind;
4. The grand co-ordinated tics, of which there are two varieties, the simple and the complex.

Under the head of simple co-ordinated tics are placed the balancing of the body, the rotation of the head, and the butting or striking, for which Roubiniwitch has proposed the name of *krouomania*. These manifest themselves most frequently when the patient is seated, and consist of a violent antero-posterior movement of the trunk; or the head alone is moved by long, rhythmical, regular movements, or is rotated from right to left with great rapidity, or is violently butted against the nearest object. The small, co-ordinated, non-rhythmical tics are of the greatest diversity. Often beginning as a habit, they become constant and rapid repetitions of ordinary movements, and with idiots these movements are imitations, or have their origin in the necessity for motion. They are frequently united with the convulsive tics, with the balancing of the body, or the rotation or the butting. Noir has called special attention to a palmus which he has observed most frequently in blind idiots, consisting of rapid movements of one finger before the eyes. His explanation is that the blindness generally not being so complete as to prevent the perception by the retina of some luminous rays, the blind idiot causes alternate movements of light and shade in this manner, and voluntarily causes this sensation—a rather far-fetched explanation, I am afraid, which needs explaining. The grand co-ordinated tics were seen by Noir only in vigorous idiots, and are either simple or complex. They consist of all sorts of fantastic movements; indeed, they are really attitudes, and I do not think they should be classed with palmus or tics at all. Anyone who is familiar with idiots knows the meaningless gestures which are common to certain of them, ordinary voluntary movements made seemingly automatic by the limitation of the intelligence. In some of these cases there has been described a tendency to persistent and fixed ideas or even a slight delusion with fear of places (*agarophobia* or folly of doubt), and, as we have already stated, Noir has studied them among the idiots of the Bicêtre.

My own observations have taught me that this disease, studied by the European authors entirely among the hopeless inmates of idiot asylums and in chronic cases, is by no means infrequent in relatively subacute and slighter types in the population at large. I have seen a number of cases among the patients who have come to my office. These are divisible into the following types:

1. Facial palmus;
2. General palmus;
3. Acute palmus;
4. General palmus with pseudo-melancholia.

Facial palmus constitutes by all odds the most frequent type. It consists of sudden, instantaneous, shock-like movements of lightning-like rapidity, that go to make up a sudden wink or twitch of one cheek, occasionally of both, or of the brow. This series of movements is generally followed by a second series that, however, is much weaker, and sometimes even by a third. Sometimes the head is retracted or drawn forward, or one shoulder is elevated. In the majority of the cases the winking is bilateral, but the other movements just named are usually unilateral. I am inclined to think that this is a much more common affection than is generally supposed, or even than could be gathered from my own observation, because I have a strong suspicion that most or the cases of so-called chorea that are treated by oculists are really cases of facial palmus. It is undoubtedly true that in a large proportion of these cases errors of refraction will be found, but what the percentage is I cannot say, because all of my cases have not been examined for this defect, and even if they had been they are not sufficient in number to be satisfactory. But whether this error of refraction is one of the attendant symptoms of the disease, or whether it is a mere coincidence, I cannot undertake to say. I have never yet been able to see in four cases any improvement in the disease result from the mere correction of refraction, although I am inclined to think that in some individuals this correction, together with the use of arsenic, has a beneficial effect. In two cases I have seen a very distinct improvement obtained by the relief of disease of the turbinate bones, but this gain was only temporary in effect. The cases which I have seen of this facial palmus have been of long duration, usually commencing in early childhood and invariably in those whose heredity is neurotic, although not necessarily to a marked degree; in other words, I have seen it occur at the one extreme, as illustrated by a female now under my care who is thirty-one years of age, and whose maternal aunt has been insane, whose sister had a similar trouble, and whose brother had chorea; whilst, on the other hand, I have observed it in several cases of young children, varying from six to ten years of age, in whose family, as would be shown by careful questioning, there had occurred some slight nervous troubles.

The cases of general palmus which I have seen answer very accurately to the description that was given of convulsive tic by La Tourette, except that I have not seen in them any coprolalia, nor the inco-ordination of movement that this author speaks of. They consist of intermittent, sudden, shock-like movements of diferent muscles of the body. In the face these may be repeated, as in the facial palmus, twice or even

three times; but there is not the same tendency to repetition in the other muscles affected. What I suppose would answer to a description of echolalia has also been seen in these cases, although it, I think, is rather sensational and exaggerated to liken it to an echo, for the inarticulate noise is rather a grunting or squeaking sound, very much like that which is heard in many cases of chorea. It has always been accompanied by a sudden movement of the throat, neck, and head muscles, as in a sudden throwing out of a note in singing. It is almost impossible to describe the sound in words; indeed, it has seemed to me more like a sudden spasmodic expiration, such as would be heard if a person were suddenly struck upon the abdomen, than any articulation such as "*hem*" and "*ah*," as La Tourette would have it to be in his cases. The movement in the legs is usually that of a sudden extension, and in the arms the extensors also seem to be mainly affected. In all of these cases that I have seen the intelligence is not only unimpaired, but it seems to be the rule, as is the case in chorea, that the patients are unusually intelligent; thus, one of my patients, a man thirty-six years of age, who has found this malady a great barrier to his success in life, yet learned stenography in three months sufficiently well to take the prize in a competitive examination into which one hundred and fifty individuals had entered; whilst another patient, the young woman thirty-one years of age, of whom I have already spoken, is of an unusual order of mental capacity. This type is also of long duration, commencing in early childhood and running uncured, so far as I can judge from my limited cases, as far as forty years of age. In one of the cases of this type there were at times exacerbations lasting a week or ten days, in which the patient became exceedingly pale, cold, with slight shivers, and evidencing a condition of widespread motor spasm, in which the fingers would even participate for a few hours, so as to assume the similitude of Raynaud's disease.

I have seen only one case of acute palmus. It was in a boy of six, whose heredity, as far as I could ascertain from the statements of his mother, was not neurotic. He had had trouble some six months before coming to me. He had been labelled with a number of interesting diagnoses, such as chorea, epilepsy, myotonia, hysteria, and neurasthenia. His palmodic movements were very curious. When standing near a table, looking at something, the chin would suddenly come down with a thump that would leave a black-and-blue mark, or his head would be thrown violently to one side, perhaps coming in contact with some adjacent hard object with equal force, or, while standing quietly, his legs would give a sudden twitch, and he would be thrown violently to the ground, and this even happened several times when he was seated on the edge of a stool. The child was under my care for two weeks, and, probably because of an intercurrent attack of diarrhœa, grew steadily

worse during that time, in spite of the full doses of arsenic which were administered to him. He was literally covered with bruises from the sudden and violent contacts with articles of furniture, the floor, and the walls. At last, in despair at his condition, I ordered him to be undressed and put to bed, and steadily pushed the Fowler's solution of arsenic until he was taking ten drops three times a day, when to my great surprise he began to improve rapidly, and at the end of six weeks was perfectly well. Keeping him under observation for two weeks longer, I finally sent him to his home in the West, and am informed that he has since remained perfectly well. It has seemed to me that many of the cases recorded as paramyoclonus multiplex have been really acute palmus.

General palmus with pseudo melancholia. I have seen two cases of this variety. The muscular movements are of the usual sudden, shock-like type, and of the same extent as in what I have ventured to call the general form. With them, however, there is associated a curious pseudo-melancholia, consisting of certain fixed melancholy suspicious delusions, without, however, any of the suicidal tendencies and abnormal sensations up and down the back of the head, neck, or spine, or the sleeplessness, which are characteristic of most cases of true melancholia. In both of my cases the palmus had existed for a long period, the exact limits of which, however, I could not determine, because the patient scouted the idea that he had had any trouble of the kind, but which the testimony of friends and relatives seemed to vouch for. They were both men, one thirty-six and one thirty-eight years of age. The pseudo-melancholia, however, had only existed in one case for about a year, and in the other for six months. One case passed away from my observation, and I know nothing of its further course. The other case recovered in nine months' treatment, and during the three years that have since elapsed he has been an active business man, although I have not seen him myself during that period, as he took a great dislike to me because I was forced to take strong measures to keep him under treatment, so persistent were his suspicions. One of these cases was mistaken for general paresis with a melancholy onset by a competent neurologist of this city, and he persisted in his diagnosis until the course of events demonstrated his error; indeed, it is not wonderful that this should have been the case, because anyone who is not familiar with this type of disease might readily be thus misled. There was, however, no element of dementia in the case; on the contrary, the man's mind, except so far as his melancholy delusions and suspicions were concerned, was keen and intelligent, as were also his perceptions.

The diagnosis of these cases can readily be made. The only disease with which they are likely to be confounded is chorea, from which they differ radically. In chorea the movements are of two varieties, and

both usually involve the fibrillæ of muscles and not muscular groups either acting singly or in co-ordination with other muscular groups. The fibrillary movements of chorea, too, consist either of a sudden contraction quickly beginning and quickly ending, or the contraction in the athetoid form is more gradual. Chorea, moreover, is always generalized, so that the movements are found in the upper and the lower extremities, in the trunk and in the face, and occasionally also in the abdominal and laryngeal muscles. But the movements of facial palmus are always limited to the face; even in general palmus the distinction from chorea is very marked, for in the latter disease the movements are always fibrillary, of the sudden or gradual character that has been described, whereas in the latter they are sudden—shock-like—with much longer intermissions than is the case in chorea.

The prognosis of these cases varies according to the type. I have never yet seen a case of the facial or general variety cured, but I think this statement needs to be taken with some qualification, because in no one of these cases have I ever been able to carry out thoroughly the rigid treatment which is usually so very successful in cases of chorea, namely, prolonged rest, with increasing doses of arsenic. Whether or not it would be of use in the facial variety might be a matter of doubt, but I believe that there is reason to hope for success in a certain proportion of cases of the generalized type. Then, too, if we carefully study our cases of chorea, it will be seen that there are very few of them that are really thoroughly cured, even by any treatment, for the most that we can hope to do is so to diminish the number and the frequency of the fibrillary movements as to obtain a large degree of improvement; but it has been my custom for years to exhibit so-called cured cases of chorea in which patient watching would demonstrate the existence of a few isolated fibrillary twitches. With the relatively weak movements of chorea this is a sufficiently practical result to obtain, but with the sudden, shock-like movements of palmus this would not answer the expectations of patients. The acute palmus was readily cured, as I have already stated. One case of palmus with pseudo-melancholia was cured, I believe, although, as I have already said, I cannot speak positively about this; and the other case I was not able to treat.

There has been nothing to throw any light upon the pathology of this affection. It is true that Gilbert Caddiot and Roger claimed that they stopped a so-called palmus of the ear in a dog by removing the nucleus of the facial nerve in the pons, having without effect previously destroyed the cortical centre of the facial, the internal capsule, the optic thalami, and the cerebellum. But, whilst this experiment is interesting, any neurological experimenter knows that it is impossible to limit a destroying instrument to such a minute space as would be constituted by the facial nucleus.

I am sorry that I cannot say much about the therapeutics of palmus. Arsenic certainly has a beneficial effect upon it, but this is not of so long duration as the same drug has in chorea. My acute case, however, was cured by the arsenic and the rest. It may, of course, be questioned as to how much was done by the rest and how much by the arsenic; but in regard to this I can only say that even before the case was put to bed the arsenic had effected some amelioration. In the facial and general varieties the arsenic alone will not answer, and in the one case of generalized palmus with pseudo-melancholia I could never perceive that arsenic had any effect whatever. Hyoscyamine and hyoscine have a beneficial effect that has only seemed less than that of arsenic. I gave them in doses of $\frac{1}{100}$ grain three or four times a day. Iron, which is so extremely beneficial in chorea in large doses, in conjunction with increasing quantities of arsenic, has been utterly without effect in this disease, as have also the bromides. Galvanic electricity is of distinct benefit, quite as much so as the arsenic in the cases of facial palmus; but I have not had the opportunity of using it in the other varieties. In facial palmus, also, as I have said, I have seen distinctly beneficial results from the removal of errors of refraction or irritative lesions of the naso-pharynx. My impression is that the treatment of these cases should be as follows: Arsenic should be given in the form of Fowler's solution, at first three drops three times a day, and gradually increased so that in the course of a week or two eight or ten drops three times a day are taken. At the same time galvanism should be applied carefully to the pes anserinus in facial palmus and to the spinal column in the general form, a current of three to five milliampères being used every day, from three to five minutes at a time. Absolute rest of the patient in bed, for a period of one to two weeks at the outset, should always be used, even in the cases of facial palmus. At the end of this time the patient should be allowed to sit up two or three hours a day, and this period of sitting up should be very gradually increased, so that at the end of three or four weeks more the patient should be out of bed throughout the afternoon hours, but should remain at rest during the morning and evening for a period extending for at least eight to ten weeks from the onset of treatment; and even after this long walks and rides and strenuous occupation should be carefully avoided for several months. All errors of refraction should be corrected and all irritative lesions of the naso-pharynx should be, if possible, removed. In conjunction with these special measures, the patient's general health should be brought to the highest point possible by careful and generous diet and proper tonics.

I am aware that this paper is purely fragmentary. It must necessarily be so, because we are only on the threshold of this subject, and my object has been simply to call the attention of the profession to a

disease hitherto little known in this country; although I believe it is quite widespread, so that further observations may bring us accurate knowledge which may even, I am quite prepared to state, materially modify some of my conclusions.

Bibliography.

Aretee: De Causes et naturæ diururnorum morborum. Leipsic, 1828.
Amard: Traité analytique de la folie et des moyens de la guérir. Lyon, 1807.
Bouteille: Traité de la chorée, 1810.
Bernt, J.: Monographia Choreæ St. Viti. Prague, 1810.
Esquirol: Dictionnaire des sciences médicales, 1818, t. xxiii. p. 507. Art. Idiotisme.
—— Des maladies mentales. Paris, 1838, t. xi. p. 315.
Itard: Archives de médecine, 1825.
Ferrus: Cours sur les maladies mentales. Gaz. des hôp., 1838, t. xii.
Voisin, F.: De l'Idiotie chez les enfants, etc. Memoire lu à Acad. royale de méd., le 24 Fevrier, 1843.
Seguin, Ed.: Traitément moral, hygiène, et éducation des idiots et autres enfants arrières, etc. Paris, 1846.
Foulhioux: Recherches sur la nature et sur le traitément de la danse de Saint-Guy. Lyon, 1847.
Roth: Histoire de la musculation irresistible ou de la chorée anormale. Paris, 1850.
Bosredon: Délire des aboyeurs. Comp. rendus de l'Acad. des sciences, 24 Novembre, 1856, p. 1009.
Axenfeld: Traité des neuroses, 1850.
Briquet: Traité de l'Hystérie. Paris, 1850, pp. 317 et 477.
Debrou: Sur le tic non douloureux de la face. Arch. gén. de Méd., 1866, t. iii., 6 serie.
Trousseau: Cliniques médicales de l'Hôtel-Dieu, 1868, T. iii. p. 257.
Gintrac: Nouveau dict. de méd. et chir. Pratiques, 1871. Art. Face.
Duchenne (de Boulogne): De l'Electrisation localisée, 1872, p. 723.
Jaccoud: Cliniques de Laraboisiere, 1873, p. 169.
—— Des impulsions locomotrices systematisées. Spasmes rhythmiques. Gaz. des hôp., 1886, n. 147, p. 1185.
Dagonet: Traité des maladies mentales, 1876.
Ferre: Archives de physiologie, 1876.
Ireland: On Idiocy and Imbecility. London, 1877.
Troisier; Dictionnaire encyclopédique des sciences médicales, 1877. Art. Face.
Bouchut: Du nervosisme, 1877, p. 171.
Beard: Journal of Nervous and Mental Disease, 1880, vii. 487.
Luys et Revillot: Chorée du langage. Gaz. des hôp., 1880.
Cantilena: Ecolalia, emiplegia destra corticale. Lo sperimentale, 1880.
Bourneville: Recherches cliniques et thérapeutiques sur l'Epilepsie, l'Hystérie, et l'Idiotie Comp. rendus du service des épileptiques et des enfants arrières de Bicêtre de 1880 a 1882, douze volumes.
Foucherand: Thèse de Lyon, 1883.
O'Brien: Journal of the Straits, Branch of the Royal Asiatic Society, Singapore, June, 1883.
Arnangue y Tuset: Mimisismo o neurosis imitante. Barcelone, 1884.
Hammond: Myriachit, nuova malattia, del systema nervoso. La méd. Contemp., Mars, 1884.
Ribot: Maladies de la volonte, 1884.
See, G.: De pseudo-chorée rhythmiques, spasmes toniques et tics. Sém. méd., 1884, p. 113.
Venturi: Di una forme speciale de nevrosi psico-motaria. La psichitria, Naples, 1884.
Vizioli: Sul myriachit, o sul jumping, mallatie del systemo nervoso. Giorn de neurapath., 1884.
Gilles de la Tourette: Jumping, latah, myriachit. Arch. de Neurologie, 1884, No. 22.
—— Etude sur une affection nerveuse caracterisée par de l'inco-ordination motrice accompagner d'Echolalie et coprolalie. Arch. de Neurologie. 1885, Nos. 25 et 26.
Letulle, M.: Nouveau dictionnaire de médecine et de chirurgie pratiques, 1885. Art. Tic.
Charcot: Hystérie et tics. Sémaine médicale, 1886, No. 37.
Allard: Contribution a l'Etude des tics chez les alienes. Thèse de Lyon, 1886.
Lannois: Nosographie des chorées. Thèse d'agrèg., 1886.
Dejerine: L'Hérédité dans le systéme nerveux, 1886.
Legrain: Du délire des dégénéres. Thèse de Paris, 1885.

Saury: Etude clinique des dégénéres, 1886.

Railton: Notes of a Case of Involuntary Muscular Movements, Accompanied by Coprolalia. Medical Chronicle of Manchester, April, 1886.

Leroz, Ch.: L'Antipyrine dans la chorée de Sydenham. Quelques formes rares d'éruptions, des récidives, du tic post-choréique. Thèse de Paris, 1886.

Guinon, G.: Revue générale de la Gaz. des hôp., Sept. 1886.

Dupouy: Congrès de Toulouse, 1887.

Burot (de Rochefort): Congrès de Rochefort. Revue d'Hypnotisme, 1888.

Breitmann, G.: Contribution a l'étude de l'écholalie, de la coprolalie et de l'imitation des gestes chez les dégénéres et les aliénes. Thèse de Paris, 1888.

Chauvreau: Tics co-ordonées avec émission brusque et involontaire de mots articules. Thèse de Bordeaux, 1888.

Pitres: Spasmes rhythmiques hystériques. Gaz. médicale, 1888.

Vanlair (de Liége): Myoclonies rhythmiques. Revue de médecine, 1882.

Gilbert Caddiot et Roger: Note sur l'origine bulbaire du tic de la face. Revue de médecine, 1890.

Lemoine et Lemaire: Paramyoclonus multiplex. Revue de médecine, Dec. 1889, et Février, 1890.

Tokarsky: Le myriachit et la maladie des tics convulsifs. Recueil des travaux dedier au Professeur Rojewnickoff. Moscou, 1890.

Catrou: Etude sur la maladie des tics convulsifs. Thèse de Paris, 1890.

Brunon: Tics et tiqueurs. Normandie médicale, Rouen, 1890.

Hirschfeld (Heymann): Ueber maladie des tics convulsifs. Berlin, 1891.

Janowicz: Tic convulsif des enfants, paramyoclonus multiplex et chorée électrique. Thèse de Paris, 1891.

Sollier: Psychologie de l'idiot et de l'imbécile, 1892.

Bourneville: Recueil des mémoires, nots et observations sur l'idiotie, Paris, 1891.

Charcot: Toux et bruits laryngés chez les hystériques, les choréiques et les tiqueux, etc. Arch. de Neurol., 1892, tome xxiii. pp. 69 et 88.

Charcot: Leçons de Mardi a la Salpêtrière. Tome i. (4, 7, 9, et 24 leçons) 1892; tome ii. (1 et 20 leçons).

Andre, G.: Les nouvelles maladies nerveuses, 1892.

P. Blocq et Onanoff; Maladies nerveuses, séméiologie et diagnostic, 1892.

Ch. Ferre: Pathologie des émotions, 1892.

Du Tornery: Les maladies nerveuses pendant l'antiquité graeco-romaine, 1892.

Roubinowitch: Société médico-psycologique, 25 Juillet, 1892.

Petersen: Gyrospasm. Medical News, 1892.

Chabbert: De la maladie des tics. Arch. de neurologie, tome xxv., No. 73, p. 10, Janv. 1893.

Gilles de La Tourette et Damain: Un danseur monomane. Progrès médical, 14 Janvier, 1893.

Bourneville et Noir: Idiotie congénitale, atrophie cérébrale, tics nombreux. Arch. de Neurologie, No. 74, 1893.

Hammond: Miryachit, a Newly Described Disease of the Nervous System. N. Y. Medical Journal, 1884, vol. xxxix. p. 191.

Le Gendre: La maladie de Gilles de La Tourette. L'Union médicale, 1885, vol. xl. p. 109.

Neale: Myriachit or Lata. Brit. Med. Journal, 1884, vol. i. p. 884.

Brissaud: Le spasme saltatorre. Arch. gén. de méd., 1890, vol. xxvi.

Stembo: Ein Fall von Gilles de La Tourette's cher Krankheit. Berlin. klin. Wochenschrift, 1891, p. 697.

Taylor: Nervous Mimicry. Virginia Medical Monthly, 1886-87, vol. xiii. p. 593.

Guinon: Sur la maladie des tics convulsifs. Rev. de méd., 1886, p. 50; Ibid., 1887, p. 509.

——— Diagnostic des chorées. Gaz. des hôp., 1887, p. 549.

Godlee; Stretching the Facial Nerve for Tic Convulsif. Brit. Med. Journal, 1883, vol. i. p. 1122.

——— Stretching of the Facial Nerve for the Relief of Spasm of the Facial Muscles. Trans. Clin. Soc., vol. xiv. p. 44.

REVIEWS.

THE INSANITY OF OVER-EXERTION OF THE BRAIN; BEING THE MORISON LECTURES DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, SESSION OF 1894. By J. BATTY TUKE, M.D., F.R.C.P. E., F.R.C.S. E. With Illustrations and Diagrams. Edinburgh: Oliver & Boyd.

THE little volume before us, we venture to say, is one of the most valuable and suggestive that can in these days of rapid progress be brought to the attention of the neurologist. It embraces the five Morison lectures delivered by Dr. Tuke before the Royal College of Physicians of Edinburgh in 1894.

The first lecture is a clear and concise statement of the structure of a cerebral convolution, in which the important advances contributed by Golgi, Ramon y Cajal, Obersteiner, Retzius, Bevan Lewis, and others receive their full share of attention. All of the essential points are beautifully illustrated by a large colored plate. Space forbids our entering into the details of this admirable description, as they can only be understood by reference to this plate. It will suffice, perhaps, to recall that in addition to the various layers of cells found in the cortex, four in number, and to the projection, commissural, and association systems, there are other and much thicker fibres, "proceeding possibly from the medulla or cerebellum, which, passing usually in an oblique or horizontal direction through the thickness of the gray matter, form ramifications of enormous extent throughout its whole substance, the superficial zone included. The terminal branches form varicose arborizations which appear to inclose preferentially the small pyramids." Further, the relations of the nerve-cells to the capillaries and lymph-spaces are not only of physiological but of profound pathological importance, as we will presently see. The body of each cell "is encapsulated by a projection of the hyaline sheath of its nutrient capillary, the perivascular space so formed being the commencement of the lymph-path which leads from the cell to the main lymphatics of the head and neck. The brain has no true lymphatics, and is dependent on the perivascular system for the removal of effete and superfluous material. All of the blood-supply of the convolutions is derived from the pial arteries, "which on the summits are given off directly, and in the sulci form large descending branches. Each vessel carries with it a prolongation of the pia which surrounds the vessel to its ultimate branches. This is often spoken of as the adventitia of the vessel. From this pial or hyaline sheath processes are given off which encapsulate the cells, each of which is thus surrounded by a perivascular capsule."

With such facts as these before him, the author begins the second lecture with a consideration of the various causes of implication of the

apparatus. Among these, over-exertion of the brain is evidently one most interesting and important. Physiological hyperæmia, the result of brain activity, the rise of temperature that accompanies this process and other associated phenomena are dwelt upon. The author, further, dwells *in extenso* upon the significance of Hodge's discoveries in regard to the loss of substance in cells and the difference in reaction to stains after prolonged activity, *i. e.*, the changes which are noted in nerve-cells after fatigue; and he also alludes to the interesting discovery of Mosso, who clearly demonstrated that fatigue caused by psychical action produces not only a poisonous effect on the general system, especially the muscular, of the person experimented on, but he has also shown that the injection of blood taken from an exhausted animal into the circulation of animals at rest produces in them the extreme indications of fatigue. He is of opinion that the symptoms of poisoning are produced more from the breaking-down of nerve-cells than from any impairment of nutrition.

In the third lecture Dr. Tuke dwells upon the accentuation of general pathological changes in the Rolandic area. Thus, he says, it may be considered as a fact that the condition of the pia as viewed by the naked eye affords a fair index of the degree of *active* morbid action going on in the subjacent convolutions, and at the same time he directs attention to the apparent difficulty in that the very regions, namely, the frontal lobes, the aberration of whose functions is a prominent symptom of the insanity of over-exertion, present in most cases slight visible departures from normality of the membrane. For this curious fact he suggests the following ingenious explanation: In the frontal region the cell-degeneration is of a granular character, which may more or less rapidly go on to destruction and absorption. This, to his mind, "is indicative of impaired nourishment rather than of active morbid action—of interruption of trophesial function—which depends on the maintenance of the integrity of cell-connection. To this destruction of cell-material and of the implication of nerve-fibre, presently to be spoken of, must be ascribed the general shrinkage of the anterior lobes so often noted in the insane." "In the course of almost every case of idiopathic insanity —*i. e.*, insanity due to over-exertion of the brain—we have a fairly well-marked prodromal period indicating the diseased balance between nutrition in the kinæsthetic area. As the impaired function of the cells of this area makes itself felt on the cells of ideational centres, whether by lessened or increased conduction of energy, or by modification of their nutritive influences, we have reduction of their structural integrity and perversion of psychical acts. As every case runs its course to recovery or to permanent insanity, we have a period of mental and physical torpor, which we speak of as dementia. On the rapid removal or non-removal of the causes of implication of the cells of the Rolandic area depends the issue of the case—recovery or prefrontal atrophy."

The milkiness or infiltration of the pia he regards justly as dependent on the damming back of the lymphatic stream. This condition first appears "as a fine milky line along the course of the pial veins, and is due to the deposit of waste and plastic exudates. As these accumulate and diffuse, the membrane becomes thick, tough, and on section is found to consist of a mass of material which looks like an immense increase of the normal trabeculæ. Through this thickened structure the flow is slow, and the waste material which would have been disposed of were

the channels patent is deposited in a certain circumscribed area. It is probable that the fluid is filtered in the thickened pia, and that as it reaches the larger cisterns it is so slightly loaded as to pass freely into the wide space in the spinal canal." The predominance of these appearances in the area of distribution of the middle cerebral artery suggests the query, "Is it that the demand for blood by the active part of the organ leaves after it the signs of work and the evidence of waste of tissue?"

In a further consideration of the trophic interrelation of different portions of the brain, especially the relations between the frontal and Rolandic regions, he is led to express the conviction that "in the brain interruption of connection is brought about by Wallerian degeneration of fibres, processes, and collaterals, the result of structural implication of cells produced by over-stimulation and mantained and aggravated by the effects of poisonous exudates."

In the fourth lecture the author takes up the consideration of the symptomatology and etiology of over-exertion of the brain, and in the fifth and last dwells at some length upon the treatment. The latter consists essentially of prolonged rest, with the use of few or no drugs. Especially does he insist upon securing sleep by simple means, such as counter-irritation to the back of the neck, warmth to the feet and back or over the abdomen, or by gentle shampooing or massage applied to the head or neck. The kidneys also should be stimulated. "As a rule, the patient begins to sleep by snatches, and, as the case goes on, in more continuous periods. No doubt steady sleep for five or six hours, or even longer, is what we hope for; but if a patient, who for days or weeks previously has hardly slept at all, and then only probably by the use of alcohol or opiates, gets five or six hours in the twenty-four by an hour or two hours at a time, he does fairly well."

When medicines are required Dr. Tuke makes free use of antipyrine, giving as much as fifteen grains every two hours, and he tells us that "it very generally soothes and produces sleep, and the general condition improves;" and to this he adds the statement that he has "frequently given antipyrine to the amount of 60 to 100 grains per diem for a fortnight at a time," and that he has "never noticed any of the ill-effects ascribed to it, except occasionally nausea and vomiting. It may be that patients in the condition we are speaking of may be more tolerant of the poison than those in whom temperature runs high. As in all nervous cases, the dosage is at first a matter of experiment; but it is quite safe to begin with the dose above indicated, raising it somewhat, and administering it more frequently, according as the patient's condition improves."

If forced to use other remedies, he prefers paraldehyde, administered in two to three drachm doses per rectum.

In closing he regrets the fact that general hospitals are closed to cases presenting mental symptoms unless these are produced by alcohol. He says: "I have no hesitation in saying that were wards set aside in each of our general hospitals for the treatment of early cases of insanity by the ordinary physicians a vast amount of misery would be relieved, and, what appeals to a large section of the public, the yearly increasing expenditures on asylums would in no slight measure be obviated."

In the prefatory notes to these lectures he tells us that since their original publication in the *Edinburgh Medical Journal* important inves-

tigations have been made bearing on certain opinions and theories advanced in them, and that though he does not deem it advisable to anticipate the fuller publications of these investigations he feels justified in saying that they throw much light upon the nature of cell-changes, upon the rapidity of subsequent deterioration of the connective apparatus, and on the absolute necessity of rest for recuperation, and that they will thus aid us to arrive at a rational treatment of the insanities.

It is to be regretted that among the various names of men to whom he gives credit that of Weir Mitchell does not occur, especially as the treatment proposed by Dr. Tuke for the incipient insanities of over-exertion is essentially the rest-cure method as introduced by this distinguished American. F. X. D.

ASEPTIC SURGICAL TECHNIQUE, WITH ESPECIAL REFERENCE TO GYNECOLOGICAL OPERATIONS, TOGETHER WITH NOTES ON THE TECHNIQUE EMPLOYED IN CERTAIN SUPPLEMENTARY PROCEDURES. By HUNTER ROBB, M.D., Associate in Gynecology, Johns Hopkins University; Professor of Gynecology, Western Reserve University, Cleveland, Ohio. Illustrated. Pp. xvi., 264. Philadelphia: J. B. Lippincott Company, 1894.

FROM our knowledge of the excellent experimental and practical work which the author has been doing for several years in connection with the perfecting of surgical technique, we are prepared at the outset to accept without hesitation the concluding statement in Dr. Kelly's introduction, that he is "eminently qualified to speak and command our interested attention in relation to the subjects treated in the book before us."

The introductory chapter will be especially valuable to the general reader, who will learn from it the practical value of laboratory investigations. Many successful operators who pride themselves on being purely "practical" will not admit the debt which they owe to the patient toilers at the microscope, who have done so much to remove the element of empiricism from modern surgery. The author rightly insists upon "the necessity of the harmonious working together of the surgeon and clinician with the bacteriologist, believing that each and all will in this way gain new facts and new points of view."

The chapter on sterilization and chemical disinfection is concise but thorough. We note with satisfaction a lucid exposition of the point so commonly overlooked by the profession, that the indiscriminate use of strong antiseptic solutions during an operation is *not* asepsis.

Chapter III., on the practical application of the principles of sterilization to operating-suits and the preparation of the surgeon and his assistants, may seem unnecessarily refined to one who is not accustomed to the exact methods of modern hospitals; but we can assure the critic that the precautions described *pay*. It may not be possible or desirable for many to adopt exactly the technique recommended, but the principles involved must be mastered by every surgeon who essays to rise above mediocrity. "Any good work," we read, "necessarily involves a great deal of drudgery, and in the technique of the newer surgery the lazy man has no place."

The description of the preparation of the field of operation is clear and precise. The chapter on instruments is exhaustive, and is rendered especially helpful to the general reader by the numerous illustrations. We are interested in noting, under the head of sutures, the statement that catgut, however carefully it may be prepared, cannot yet be regarded as a perfect suture-material from a bacteriological standpoint. In view of the contrariety of existing opinions on this subject, the author's dictum must have considerable weight. With some of the statements regarding drainage-tubes we are not entirely in accord, being inclined to think that the natural deduction from the quoted objections of Dr. Welch would be to dispense with them entirely. We believe that the time will come when it will seem incredible that drainage through the abdominal wound should ever have been regarded as the ideal method. The remarks on the inadvisability of irrigation of the cavity, except under rare conditions, will now meet with the approval of most cœliotomists.

Chapter XI., on the operating-room and its furnishings, is handsomely illustrated, and though one may not feel disposed to copy for his own use all the appliances described, they certainly combine the important qualities of cleanliness and simplicity.

In the excellent chapter on the aseptic operation we note that the author finds the Trendelenburg posture "inconvenient and in the majority of cases unnecessary." While, of course, this is a question of individual preference, we are not prepared to admit the force of his objections thus briefly stated. The testimony of scores of successful operators who have adopted it cannot be lightly dismissed. Neither does the criticism that the elevated posture favors "the spreading about among the intestines of any fluids that may be present in the pelvis" strike us as being an unanswerable one, since it is assumed that the operator has thoroughly protected the intestines from contact with such fluids before beginning his manipulations within the pelvis.

The chapter on post-operative care supplements admirably the one which precedes it, and is quite a model of its kind. The same comment applies to the succeeding one on private operations.

The chapter on examinations, though good, belongs more properly to a regular text-book on gynecology, while the one on catheterization of the ureter interests the expert more than the general reader. The transposition of Chapters XVI. and XVII. would render the sequence a more natural one.

The chapters on bacteriological and pathological examinations are thoroughly practical. We entirely agree with the writer when he deplores the sad waste of valuable anatomical material in this country. But, unfortunately, few institutions possess the facilities for pathological work of the Johns Hopkins Hospital, even if the surgeons and their assistants were imbued with the same scientific ardor, and fewer busy operators have the time or inclination for personal investigations.

We have merely outlined the contents of this attractive little volume, which deserves, and ought to secure, a wide circulation. It is written in a clear, straightforward manner, and impresses one as a record of personal observations and results. Although the criticism may be made that its tone is somewhat dogmatic, this element is quite allowable in an author who is entitled to speak *ex cathedra*. It is thoroughly in accord with the spirit of modern surgery, and is an admirable exponent of the

teachings of an institution the high aim of which is to keep before the profession the fact that medicine is a progressive science as well as an art. It may be that many experts who glance at this modest work will think that they do not need the minute instructions in the details of aseptic technique, but we are sure that the general reader will derive from its perusal a clearer idea of the factors which lead to success in gynecological surgery than he has ever had before. After all, the best tests of the value of any method are its *results*, and judged by this criterion the author and the hospital in which he received his thorough training may be regarded as above any superficial criticism.

H. C. C.

MATERIA MEDICA, PHARMACOLOGY, AND THERAPEUTICS; INORGANIC SUBSTANCES. By CHARLES D. F. PHILLIPS, M.D., LL.D., F.R.S. (Edin.), Late Lecturer on Materia Medica and Therapeutics at the Westminster Hospital Medical School; Late Examiner in the University of Edinburgh, etc. Second edition. Pp. xiv., 898. London: J. & A. Churchill, 1894.

THIS work follows the same plan as did the first edition, which was published twelve years ago. Many sections have been extended, and others have been added, notably those treating of oxygen, hydrogen sulphide, iodoform, mineral waters, chromic, hydrobromic and lactic acids. The remedies are not classified, nor indeed is an alphabetical order followed. Each chemical is defined, its preparations stated, its character and tests, the method of absorption and elimination, its physiological action, both external and internal, and its external and internal therapeutical action, the various pathological conditions and diseases being taken up *seriatim;* finally the preparations and doses are briefly presented. Both pharmacopœial and non-official preparations are discussed. Covering only the smaller inorganic division of materia medica, a bulky volume should contain but few omissions. A careful reading shows that the current literature has been thoroughly studied, and in general the best has been presented, British in the greater part, American to some extent, and the Continental to a less degree being laid under contribution. Omissions of important methods are not very common, yet the advantages of the syrup of hydriodic acid over the alkaline iodides in ease of administration and effectiveness, the use of digestive ferments with the iodides, as popularized by Delavan, should have been mentioned. In the treatment of typhoid fever we expected to have found stated the great value of chlorine as an intestinal disinfectant and a full account of its literature, of which, by the way, the best is of British origin. In references to the United States Pharmacopœia the author is by no means accurate; for instance, (p. 533) *liquor barii chloridi* is not official in that work, nor, as a matter of fact, is any preparation of barium chloride. An occasional unusual expression is found; we willingly admit that the taste of bromine, even when well diluted, is unpleasant, but we scarcely believe that it is "truly horrid" (p. 137). The physiological action of remedies is carefully presented. Some sections, for instance that upon water, are well rounded out and eminently satisfactory. The strongest feature of the book is the thera-

peutical application of remedies, generally very complete, usually well selected, very infrequently containing obsolete material, occasionally somewhat diffuse, but on the whole well digested. In this department the journals and year-books have been extensively read. We wish that the author had more freely given us his personal experiences at many points in the book. As it stands free from many, and to the practitioner needless, details, it offers to him a fair presentation of modern knowledge, not unduly enthusiastic as to the clinical results to be obtained from this or that remedy, nor yet pessimistic as are frequently the utterances of many practical physicians. We regard the work as useful to the practitioner who wishes to refresh and enlarge his knowledge, and from which he can obtain many new ideas. The book is readable and one that will win a place for itself in the esteem of the profession.

R. W. W.

TRAVAUX D'ÉLECTROTHÉRAPIE GYNÉCOLOGIQUE. Par le DOCTEUR G. APOSTOLI, Vice President de la Société Françaisé d'Électrothérapie, etc. Paris, 1894.

CONTRIBUTIONS TO GYNÆCOLOGICAL ELECTROTHERAPY. By DR. G. APOSTOLI.

IN this work Apostoli has collected the contributions to gynæcological electrotherapy which have appeared in the various American and foreign journals during the past eight years. There is nothing new in this compilation to those who have followed the development of the subject during the period in question. It is simply a collection in a single language of material which has been already published in the French or in some other language. There are some who cannot conscientiously regard the subject with the same degree of ardor and hopefulness which was experienced a few years ago; indeed, we may go further, and say there are few who have the same confidence in this form of therapy which they once had. Even the most sanguine enthusiasts speak with less assurance of the therapeutic effects of electricity as applied to pelvic and abdominal disease than they did. What is the cause of this? Partly that the claims as to the utility of electrical treatment were too extravagant; partly that the armamentarium, to be at all efficient, is too costly and complicated ever to be brought into general use; partly that such improvements in surgical technique have been developed that radical results are possible with far less risk to life than formerly, and with far less outlay of time, if not of money, on the part of the patient.

We have looked through this compilation with considerable care, and have read many of the clinical histories of which the work is largely composed. Some of the statements (those of the Keiths, for example) we believe absolutely truthful and credible. They have narrated cases in which fibroid tumors were entirely and permanently cured by electrotherapy. There are few who have used this means of treatment who have had a similarly fortunate experience. It matters little whether they be told that they have used the agent improperly or not; they have done the best they could and have failed, and the agent is, naturally enough, discredited in their eyes. Now, this does not imply that elec-

tricity is useless in pelvic disease, but simply that it cannot supersede surgical measures, for the reason that it is uncertain as to the effects produced. It is distinctly inferior to surgery in many instances in which both means have been tried. It would be a great boon to humanity if a measure involving no risk to life, painless in application, and certain, or nearly certain, to bring relief for the trouble for which it was employed, could be found; but electricity has not as yet answered those conditions, though it has been asserted it would. A very useful field is, however, open to electricity in the treatment of the minor forms of pelvic disease and in the palliative and preparatory treatment, in not a few instances, of the more aggravated forms; but Apostoli himself concedes, with greater frankness than some of his followers, that its scope is more circumscribed than he was in the habit of admitting a few years ago. We have no sympathy with those who decry electricity as useless or invariably harmful. Such assertions usually come from those who are prejudiced against it, and who are either without experience in its use or so biased that careful observation of its effects *pro* and *con* would hardly be possible.

We shall welcome from Apostoli, or any other source, any information and experience which will demonstrate conclusively that it has latent virtues which have not yet been discovered; but until then we can see no possibility of its holding any position but a subordinate one to surgery.

A. F. C.

ATLAS OF ELECTRIC CYSTOSCOPY. By DR. EMIL BURCKHARDT, of Basel, and E. HURRY FENWICK, F.R.C.S. Eng. London: J. & A. Churchill.

CYSTOSCOPY has in reality scarcely yet attained to its puberty, as the instrument of Nitze and Leiter was presented to the Vienna Society of Physicians but fourteen years ago. In view of its tender years, as compared with the advanced age of the sounding process, it seems scarcely proper to expect it to conjure marvels, and eminently improper to condemn it because it does not do so. There can be no question that in the hands of an expert the cystoscope is an instrument of great value; that it has already produced a revolution in vesical pathology; and that by its aid we are often enabled to diagnosticate obscure disorders, to contradict preconceived opinions as to the nature of diseases, to form a positive prognosis, and to outline a rational treatment. It is quite true that an examination, to afford information, must be made with a degree of dexterity to attain which requires long and patient practice; in other words, must be made by an expert or specialist. The same fact is, however, true of examinations of the eyes by the ophthalmoscope and of the larynx by the laryngoscope, and the difficulty of the procedure does not destroy the claims of the process to be a legitimate and often essential diagnostic method.

The plates are masterpieces of art, and will serve a valuable purpose as guides for study and comparison. The plate of renal hæmaturia shows the ureteral orifice of the diseased side vomiting blood as a volcano throws up lava. Cystitis is exhibited in all its forms. Vesical tuberculosis, tumors, calculi, foreign bodies, fistulæ, and ulcers are graphically portrayed,

This book will prove eminently useful, in fact invaluable, to a genito-

urinary surgeon, as it is a faithful reproduction of the appearance of the bladder in various diseases, and is the result of the painstaking and accurate studies of two most able and distinguished observers.

J. C. Da C.

Les Tractions Rythmées de la Langue. Par J. V. Laborde, Directeur des Travaux physiologiques à la Faculté, Membre de l'Académie de médecine. Pp. iv., 187. Paris: Felix Alcan, 1894.

The Rhythmic Tractions of the Tongue.

This little book treats of a rational and powerful means of re-awakening the respiratory function, and has for its text "the physiological treatment of death." In the tenth chapter we find explained the physiological mechanism of the action of these tractions, which is, briefly, that it is upon the sensory nerves, the superior laryngeal, glosso-pharyngeal, and lingual; the excitation of these being transmitted to the bulbar centre, is carried outward by the motor nerves, the phrenic (for the diaphragm), the nerves of the thoracic muscles, and the nerves of the respiratory muscles of the face or the facial nerve. This is well shown in a colored plate. The experimental work was carried out upon a dog and upon guinea-pigs submerged in water until they were apparently dead. The clinical aspect of the question is well shown in the sixty-three cases, collected from various sources, in which the patients have been brought to life by this method. This method, which has for its purpose the establishment of respiration, is indicated in all of the various forms of asphyxia, from drowning, from the action of poisons, even to that produced by electric shock, and not omitting the asphyxia of the newly born. The technique of the author is fully described by Mareschal in the thirteenth chapter. The author claims for his method simplicity, ease of application, and favorable results, even to "veritable resurrections." We have read this work with much interest, and we bespeak for its contents careful study, and, for the method therein described, faithful trial by those who meet with instances of apparent death. R. W. W.

Man an Organic Community. Being an Exposition of the Law that the Human Personality in All its Phases in Evolution, both Co-ordinate and Disco-ordinate, is the Multiple of Many Subpersonalities. By John H. King. In two vols. London and Edinburgh: Williams & Norgate. New York: G. P. Putnam's Sons, 1893.

This book ranges far afield. It is a work of wide generalizations, attempting to establish certain laws upon the accumulated data of contemporary biological science. It is not a book which will commend itself to the members of the medical profession either by reason of its matter or of its style. The former is not of absorbing interest to physicians, and the latter is incomprehensibly heavy and dull.

There are, however, certain propositions in the book which appeal to the intelligence of all scientists, and which have some special interest for those physicians who devote themselves to the problems of psychology and psychiatry. As the title implies, the book embodies an attempt to explain, or to state anew, the vexed problem of the human personality.

The human personality, or the personal identity, which was long regarded as a purely metaphysical concept, and susceptible of only a metaphysical definition, has come to be recognized as the legitimate object, even the necessary object, of modern scientific investigation. As in the case of so many other metaphysical subjects, it is probable that science can yet give the most intelligible explanation of this illusive phenomenon. As Mr. King says: "The world-wide concept of the human personality was that of a conscious ego, a ghost, a something scarcely definable, dwelling in and presiding over the organic faculties constituting the individual." We can see plainly enough now that this was a metaphysical and theological concept, and we can have an intelligent appreciation of Mr. King's laudable and learned efforts to prove that the human personality is in truth a "multiple," a resultant, of what he calls many subpersonalities, but which we can understand better as the multimanifestations of the complicated cell-organization of man. The author slowly and laboriously works out this idea, beginning with the simplest biological objects, the protoplasm and the nucleated cell, and proceeding thence through the vast realms of embryology, physiology, and even pathology, until he reaches his conclusions, which he summarizes in a philosophical but rather dogmatic way.

We note with interest the author's references to some of the problems of mental pathology. He recognizes how admirably his views of the disco-ordination of the human subpersonalities are illustrated in the various forms of insanity. The organic unity of the mind, what we call the personality or the individual identity, is variously and strangely affected by disease. Morbid processes have a disruptive effect, and show conclusively in many cases that the conscious "ego" is in fact a multiple of many minor factors, or "subpersonalities;" hence when deterioration occurs, the varied and fragmentary relics of the once-dominant healthy consciousness, self-consciousness or ego, present often the most instructive studies to the alienist. Mr. King in his book thoroughly recognizes this fact, and uses his material in quite a skilful way for one who apparently has only compiled it. The subject, to be sure, is still obscure, and requires treatment by one more directly familiar by personal study with the phenomena of mental disease, and who at the same time is the master of a simpler and more lucid scientific style than that of the author of this book.

J. H. L.

A Treatise on the Diseases of the Ear, including the Anatomy and Physiology of the Organ, together with the Treatment of the Affections of the Nose and Pharynx which Conduce to Aural Disease. By T. Mark Hovell, F.R.C.S. Edin., M.R.C.S. Eng. 8vo., pp. 720, with 122 illustrations. London: J. & A. Churchill, 1894.

This new treatise on aural diseases constitutes a handsome volume, handling fully and well almost every topic within its range. The author is better known to us as a laryngologist, by reason of his connection with the Emperor Frederick's case; but he keeps this side of his subject within narrow limits. Extensive reference is made throughout to the work of others, with more acquaintance with the later German and French workers than is always to be found in a British book; yet the

author is fairly personal in most portions of his teaching. His illustrations are about one-half original, the others being, as a rule, well selected; but his dozen drumhead pictures have the disadvantage of being hardly life-size.

Some sixty pages in the first chapters deal with the anatomy and development of the external and middle ear, marred by a few of the usual errors, but satisfactory in the main, as is the later chapter on the anatomy and physiology of the labyrinth. A chapter on etiology and history-taking is followed by a good summary of the methods and appliances for examining the ear, and 36 pages are given to the study of the naso-pharynx and Eustachian tubes, with the various methods of inflating the tympanum. Other measures of exploration and treatment are discussed in the sixth chapter, in which this treatise stands almost alone in insisting on a proper temperature of the water for syringing (100°–105°) [100°–115°, Rev.]. Diseases of the external ear are fairly dealt with in 100 pages, and 50 are given to the nasal and pharyngeal conditions affecting the ear. We must criticise his free use of cocaine; and from his remarks as to its shrinking effect on parts about to be cauterized or snared, feel that these measures are sometimes used in cases not demanding them. His advice is usually rational and judicious. The technique of removal of tonsils and adenoid overgrowths is quite explicitly given, general anæsthesia being held as requisite for the latter as it is needless for the former.

The author differentiates well the various forms of middle-ear disease, yet rather contradicts himself as to the purulency occasionally found in *catarrhal* otitis media. He treats of the operative interventions for chronic adhesive catarrh as though he were too skeptical of the results claimed to have made personal test of the procedures—an attitude rather justified by the changing views of the advocates of excision, etc. In chronic suppuration of the tympanum he trusts most to the dry treatment with boric acid, combined with all needful constitutional and hygienic measures. In mastoid involvement he uses leeches and cold, and believes in the efficacy of the Wilde incision, now generally lapsing into disuse. The operation of opening the mastoid is discussed at some length in its various aspects, with summarizing of the views of others rather than any digested personal teaching. The chapter on the intracranial extensions of aural suppuration is more systematic and concise, although, also, without reference to his own experience.

A good chapter on general and local diseases involving the ear is followed by one on traumatisms, and a very brief one on otalgia, for which atropia in dose of one-twentieth of a grain seems excessive. In a good but not exhaustive chapter on the Ménière group of symptoms he inclines to the view that they "originate in lesions affecting the brain or its membranes," although admitting some labyrinthine cases. He misses the point that they are due to *irritative* lesions, and, therefore, absent when *destruction* occurs. Auditory neuroses, electrical treatment, deaf-mutism, aids to hearing, and ear-disease in relation to life-insurance, occupy the closing chapters as in most text-books.

As to many parts there is a disappointment that the author has remained so non-committal and merely edited the statements of the best authorities; for close reading reveals many a little wrinkle that marks the careful, practical man, whose own experiences, even if not all-embracing, ought to be too valuable to be thus suppressed. B. A. R.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,

PROFESSOR OF CLINICAL MEDICINE AND THERAPEUTICS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; VISITING PHYSICIAN TO ST. MARK'S HOSPITAL.

Suggestions for the Treatment of Gonorrhœa.

Drs. Bernard E. Vaughan and Henry T. Brooks, from a careful clinical and laboratory study of the gonococcus, conclude that there is evidence of (1) the etiological relation of the gonococcus to the gonorrhœal process; (2) the luxuriant growth of the gonococcus in acid media, its feeble or suspended growth in alkaline media; (3) the influence of temperature upon its development (growth being suspended at 104° F.); (4) the liability of infection from clothing. The influence of alkaline media and of temperature is especially to be regarded.—*Journal of Cutaneous and Genito-urinary Diseases*, 1895, No. 148, p. 18.

Magnesium Sulphate by Hypodermatic Administration.

Dr. James Wood seeks to explain the purgative action of this drug when given by hypodermatic injection. Saline purgatives have the power of exciting more or less the glands of the intestines and of causing them abundantly to pour forth their secretions. This drug in moderate doses accomplishes this without appreciably stimulating the peristaltic action. This being true, a part of the fluid poured out may be reabsorbed and carry with it into the blood a quantity of the salt, and also cause the contents of the bowel to lose their fluid or semi-solid consistency. This seems to be the explanation of its action when given hypodermatically, and an explanation of why we often see cases of constipation after the drug has been given *per rectum*. Two or three grains of neutral magnesium sulphate injected into the deep muscular layers of the nates in men, or into the calf of the leg in women, were successful in 70 per cent. of the cases; 20 per cent. required more than one injection, and in 10 per cent. the bowels failed to act. In nearly all cases the bowels moved within ten hours of the injection.—*Therapeutic Gazette*, 1895, No. 1, p. 9.

The Treatment of the Albuminuria of Pregnancy.

Dr. Henri Huchard insists that at the moment when a trace of albumin is found in the urine of a pregnant woman she should be placed at once upon an absolute and exclusive milk-diet until such time as the albumin has completely and definitely disappeared. If there is need of a purgative, it is better to prescribe calomel. If the patient is one who has passed albumin in preceding pregnancies, the milk-diet should be used as a preventive of albuminuria. Nor should it be forgotten that there may be an auto-intoxication even in the absence of albumin; therefore, when more or less marked symptoms of toxæmia arise, as headaches, vertigo, nausea, visual and auditory phenomena, and especially dyspnœa without apparent cause, this diet should be immediately prescribed. Watch the kidney which eliminates toxins, and the liver which arrests them, neutralizes them, and prevents their diffusion through the organism. The woman attacked by the albuminuria of pregnancy most certainly ought not to travel; the phenomena of genito-urinary excitation, which are normally produced by the jarring of a railway journey, can readily in these cases, when an old or subacute congestion of the kidneys exists, render the organs impermeable and promptly produce fatal results. Beyond this, repose, absolute or relative, is essential, and no drugs should be prescribed.—*Journal des Praticiens*, 1895, No. 1, p. 3.

The Mechanical Treatment of Anasarca.

Dr. H. Schurz states that three methods are employed: 1, simple incision: 2, aspiration with trocar; and, 3, drainage by means of a funnel. For the last two methods it is important that the surface to be drained should be treated according to surgical principles. The incision should be dressed with gauze moistened with a sublimate solution, and over this should be laid a thin cotton-dressing. The patient should remain in a sitting position with feet dependent by day and by night in a horizontal position, the escaping serum being received in rubber tissue, which will conduct it into the receptacle. The dressings should be changed every twenty-four hours, and the edges of the wound anointed with vaseline.—*Therapeutische Monatshefte*, 1895, Heft i. S. 1.

Bismuth Subgallate.

Dr. O. Wiemer has found that it is characteristic of this drug that it accelerates the healing of wounds, unites the wounded surfaces, and is entirely free from any symptoms of irritation on the part of the tissues, the result being the "dry treatment" of wounds. In ordinary disinfection by means of irrigation considerable irritation necessarily results, and, as a consequence, discharge from the wound. The use of every substance and method likely to cause irritation should be avoided, and cleanliness and measures tending to prevent the access of germs encouraged. The remedy is used in substance as dusting-powder and as a 10 per cent. gauze, the latter possessing the advantage that it can be sterilized in steam at 212° F. without destroying its antiseptic properties. Before the operation all dressings, compresses, and material are sterilized in a Lantenschläger's apparatus. During the

operation antiseptics are excluded; the blood is removed by pledgets of the gauze above mentioned and the hemorrhage checked by the most painstaking care, so that the wound is absolutely dry. The powder is then used, being thoroughly rubbed in, and the gauze applied. The drug seems to be absolutely non-poisonous, 150 grains administered by the stomach-tube to rabbits and dogs being absolutely harmless. On the other hand, an instance is reported where serious symptoms followed the use of this drug in the peritoneal cavity after cœliotomy, due presumably to its use when absorption is energetic; but these symptoms were those of bismuth-poisoning and analogous to those observed when bismuth subnitrate has been used as an antiseptic.—*Therapeutische Monatshefte*, 1895, Heft i. S. 15.

The Physiology of Nicotine.

MM. Grasset and Parentz have studied nicotine oxalate, which is eight times less toxic than nicotine. The constant symptoms were contraction of the pupils, paralysis and convulsions, salivation, cerebral anæmia, peripheral vaso-constriction, cardiac asystole. By acquiring a tolerance animals could bear a dose larger than one ordinarily toxic.—*Journal des Praticiens*, 1895, No. 12, p. 30.

The Treatment of Gonorrhœa.

Dr. M. Horovitz states that during the first few days after the appearance of the symptoms a local application of a 10 per cent. silver nitrate solution through a short endoscope, after a preliminary cocainization of the urethra, this repeated upon the next day, and later followed by an astringent injection, has resulted, in a few cases, in cure. In very sensitive urethras a 2 per cent. solution of potassium permanganate may be successfully substituted for the silver nitrate. For use as an injection various remedies are useful: Zinc sozoiodolate (1–2 : 100); zinc sulphocarbolate (0.5–1 : 100); potassium permanganate (0.05–0.1 : 100); silver nitrate (0.1 : 300); corrosive mercuric chloride (0.01 : 300); and ichthyol (5 : 100). Solutions of resorcin which are brought into contact with the mucous membrane for a sufficiently long time produce an exfoliation, and thus may lead to an evacuation of the gonococci. The injections should be used for three or four weeks, three or four times daily, and the solution retained in the urethra for one or two minutes. Later the number of injections can be diminished. With lessened discharge, the 3 per cent. alum or 1 to 2 per cent. tannin solution, to which red wine has been added, are useful. A watery and persistent discharge may be successfully treated by aqueous suspensions of bismuth subnitrate, salol, or iodoform. In posterior urethritis local treatment to this portion of the canal is necessary. Dittel's or the modified Lallemand caustic-carriers, or the Durtment syringe of Tommasoli, are useful.—*Centralblatt für die Gesammte Therapie*, 1895, Heft 14, S. 1.

The Active Principle of Cereus (Cactus) Grandiflorus.

Mr. J. B. Nagelvoort quotes Sharp as stating that glucosides and alkaloids are absent in the plant. His personal investigations, carried out

as general methods, including "characteristics for many glucosides," of plant analysis, showed that the fluid extract did not yield an alkaloid.—*American Journal of Pharmacy*, 1895, No. 1, p. 31.

The Elimination of Medicinal Substances by the Gastric Mucous Membrane.

Dr. Paul Binet states that the gastric mucous membrane normally eliminates a large quantity of chlorine, especially under the form of free hydrochloric acid during digestion or in the state of the alkaline chlorides. An intravenous injection of sodium chloride notably increases the proportion of fixed chlorine in the stomachic contents. The passage appears to be less easy when the chlorine is held in an oxygenated combination, as in the alkaline chlorates. Iodine and bromine injected as alkaline iodides and bromides easily pass into the stomach, and their elimination lasts several days after the injection. Antimony, however, after either intravenous or subcutaneus injection, cannot be determined to be present by either the Marsh test or by electrolysis between zinc and platinum, so that its passage into the stomach is not a constant phenomenon. As for lithium, traces have been found in the water removed from the stomach by lavage after a subcutaneous injection of fifteen grains of lithium chloride. The results of the investigation of strontium have been negative, while those of magnesium have been doubtful. In the last case the quantities obtained have been too small, even after an intravenous injection of one hundred and fifty grains, to admit that these are not the result of accident or of contamination of the food. These investigations are important not only as showing how it is possible for reabsorption to take place, but as well to demonstrate that in certain cases of poisoning washing of the stomach may be employed with benefit, even if the poison has not been taken by the mouth, as, for instance, when given hypodermatically or *per rectum*.—*Revue Médicale de la Suisse Romande*, 1895, No. 1, p. 5.

The Use of Hydrochloric Acid in Gastric Diseases.

Dr. Henri Huchard believes that this remedy possesses two important properties—eupeptic and antiseptic. As to the former, it supplies to the gastric juice the acid which is wanting, and therefore it is indicated in all conditions in which hydrochloric acid is diminished and with greater reason when it is absent. In the latter case by its presence it can render the pepsin active which otherwise would be inert. This drug is indicated in delayed digestion, deficient secretion of hydrochloric acid, chronic gastritis, cancer of the stomach, in the pyrexias, which almost completely suppress its secretion, in pulmonary tuberculosis, in under-compensated hearts, especially in chlorosis and anæmia, and in certain conditions of the nervous system, as neurasthenia. It is contra-indicated in hypersecretion, gastro-succorrhœa, ulcer, acute gastric affections, in cancer secondary to round ulcer, nervous dyspepsias of the neuropathic and hysteric. Its use should be continued for three or four weeks, omitted for a fortnight, to be again renewed. Large doses, as those recommended by Ewald, fifteen drops three or four times after meals, at quarter-hour intervals, are to be avoided. As an antiseptic it prevents abnormal fermentations and the production of organic acids. It is indicated in

dilatation, in certain forms of gastric cancer, in all gastric conditions characterized by fermentation, and in pyrosis due to the formation of acids due to fermentation. In these cases, administer it some hours after meals. As an eupeptic give it during and after the meal. To combine these two effects exhibit one dose immediately after and a second one three or four hours later. —*Journal des Praticiens*, 1895, No. 7, p. 97.

The Treatment of Nervous Vomiting.

Dr. Tisserand (*Thèse de Paris*) prescribes the use of ice internally as well as externally, or, in place of the latter, a spray of ether. A one per cent. chloroform-water, four per cent. solution of lactic acid, ten to fifteen drops of tincture of iodine, or revulsives to the epigastrium, may be tried. If these means fail, the patient may be nourished by the œsophageal tube, which will usually succeed with hysterical and neurasthenic individuals. In paroxysmal vomiting these remedies fail, and recourse must be had to strong doses of morphine or of cocaine, or even administered hypodermatically. Atropine sulphate in dose of one hundred and twenty-eighth of a grain has been recommended. If there is hæmatemesis, an ice-bag externally and ferric chloride, and especially ergotin, are to be prescribed. If the cause can be ascertained, sodium bicarbonate for the excessive amount of hydrochloric acid, or if there is excessive secretion, lavage may be useful. In neurasthenia and hysteria the aid of hydrotherapy or suggestion may be invoked. If the vomiting is reflex, find the cause: give purgatives if there is digestive torpor; anthelmintics for worms; induce abortion for the uncontrollable vomiting of pregnancy.—*Journal des Praticiens*, 1895, No. 6, p. 90.

Treatment of Painful Dyspepsia.

The editor notes the usefulness of the term dyspepsia, although it lacks definiteness. For the sensation of distention, most frequently associated with pains in the præcordium, occurring in neurotic persons, and generally termed "nervous indigestion," a combination of chloral, one-half to one drachm, sodium hyposulphite, one to two drachms, and peppermint-water to three ounces, administered in teaspoonful doses after meals, has proved to be useful. The chloral acts as an antiseptic and nervous sedative, as does also the sodium hyposulphite; and peppermint-water, if freshly prepared, possesses all the antiseptic properties common to the volatile oils, in addition to its slight local anæsthetic and stimulant properties.—*Therapeutic Gazette*, 1895, No. 2, p. 86.

Bromethylformine.

Dr. Leop. Lagner notes the search after combinations of bromine with organic bodies which shall possess the properties of the metallic bromides without their unpleasant secondary effects, as furunculosis and fetid breath. This combination was obtained by Trillat from bromethyl and formine and is a bromethylate. It is colorless, crystallizing in scales very soluble in water, and in this solution is free from the disagreeable taste of the metallic bromides. Its composition is given as $(CH_2)_6N_4C_2H_5Br$, and contains 32.13

per cent. of bromine. The dose is double that of potassium bromide. Because of its ready solubility it can be administered in water or in the preparations of peppermint, valerian, etc. Thus far it appears to be a safe and efficient substitute for the metallic bromides.—*Les Nouveaux Remèdes*, 1895, No. 2, p. 32.

The Treatment of Mercurial Tremor by Hyoscyamine.

Dr. H. Bruger (*Thèse de Paris*) has reported the results of his observations of the use of this remedy. The method recommended by Oulmont consisted in prescribing each day two pills of the drug each containing one-sixty-fourth of a grain, and in doubling this quantity every two days until the maximum of ten to twelve times the original dose was taken. These large doses produced pharyngeal irritation, mydriasis, mild delirium, and diarrhœa; serious inconveniences which prevented its universal adoption. Cuffer, on the other hand, never exceeded one-sixteenth in the milder and one-sixth of a grain in the severer forms, and exhibited the drug between meals. This time of administration was selected to avoid digestive and salivary disturbances. It was found to be advantageous to prescribe a milk-diet and to employ sulphur baths to aid in the elimination of the mercury. There were no toxic symptoms, and diminution of the tremor followed in twenty-five to thirty days, after which the use of the limbs was recovered, and complete cure resulted in six to eight weeks. This drug is active and dangerous, but moderately cumulative, but in small doses extended over a considerable period of time one avoids these inconveniences.—*Journal des Praticiens*, 1895, No. 5, p. 74.

The Use of Alcohol in Diabetes.

Dr. Felix Hirschfeld concludes that in the amount of one or two ounces alcohol is completely oxidized in the organism of the diabetic. The amount of urine is not increased nor the absorption of aliment influenced. The albuminous metabolism, on the contrary, is markedly increased, and as a result the general nutrition is improved. Upon the tissue-changes peculiar to diabetes, the glycosuria, the acetonuria, and the lessened absorption, alcohol is without influence. The unfavorable action of alcohol in its possible injurious action upon the heart and bloodvessels is to be considered. Especially in an accompanying albuminuria is the danger of renal irritation present. The use of alcohol in severe cases of diabetes is necessary that we may avoid and limit the supervening failure of strength and development of tuberculosis from insufficient nutrition. In mild cases of glycosuria, only the property of alcohol as a *genussmittel* is to be considered, and then occasionally in moderate amount —*Berliner klinische Wochenschrift*, 1895, No. 5, p. 95.

The Comparative Activity of Digitalin and Digitoxin.

Dr. E. Bardet, from a study of the French crystallized digitalin and the German digitoxin, has arrived at the following conclusions: 1. Crystallized digitalin, so-called chloroformic, is the only one of the products derived from digitalis which represents a really definite principle and one of constant action and well recognized from a therapeutic standpoint. 2. Digitoxin

is not, as has been alleged, a principle identical with the crystallized or even the amorphous digitalin, but is a non-crystalline amorphous mixture of indefinite composition. Its activity is variable, and may be equal or even two or three times stronger than the crystallized digitalin. 3. The amorphous digitalin, so-called chloroformic, contains, as well as the digitoxin, a body, probably a glucoside, of considerable but of varying activity. 4. There is a great practical advantage in maintaining in the pharmacopœias only those definite bodies of constant activity: consequently the crystallized digitalin, so-called chloroformic, being the only definite active principle of digitalis, ought to be the only one prescribed. 5. The Therapeutic Society ought to see to it that the French Codex should suppress the amorphous digitalin and admit only the chloroformic crystallized digitalin.—*Les Nouveaux Remèdes*, 1895, No. 2, p. 27.

Uræmic and Dropsical Coma.

Dr. Benjamin Ward Richardson states that in the acute cases there can be no doubt as to the value of bloodletting from a vein; even a feeble pulse ought not to prohibit it. Judiciously applied it is free from danger; it does not lead to collapse or shock; relief from the symptoms is, as a rule, immediate. When there is dropsical exudation with deep coma, bleeding is still a sound and correct remedial measure, although never very hopeful. It seems to give relief, but nothing more. When there is extensive exudation, with a comatose tendency, owing to fluid-pressure, bleeding need not be contended for. Artificial removal of the fluid by tapping is here of the greatest service. Diuretics have been found to be capricious and doubtful as positive means. Diuretin in one case increased the flow of urine to one hundred and seventeen ounces in twenty-four hours, but it had to be stopped owing to its production of a rapid and feeble pulse with marked prostration. The fluid can be removed by aspiration from the thorax, by the trocar from the abdomen, by Southey's tubes from the lower limbs, the comatose tendency being always relieved by reduction of pressure. In deciding upon treatment, temperature plays an important part. If it be above normal, *cæteris paribus*, there is no need for a moment's hesitation about the performance of venesection; if it be normal, although some dropsy be present, there need be but little hesitation about bleeding; but if the temperature be below normal, with dropsy, then venesection could not be expected to render the least service, it might, indeed, be a dangerous process by inducing a superfluous flow of water into a blood already attenuated. The point of practice in such a case is to draw off the effused fluid upon the pressure from which the coma is dependent. —*The Asclepiad*, 1894, No. 42, p. 113.

The Treatment of Diphtheria.

Mr. Lennox Browne, while not rash enough to dogmatize, where others have hardly dared to theorize, suggests that antitoxin acts by promoting a local capillary thrombosis at the site of the exudation, which at once leads to a shedding of the deposit, to destruction of the bacilli, and to a blocking of the channels against toxic absorption, the general system being at the same time improved by an increased metabolism of the toxic products, thereby

leading to an improvement in the quality of the blood. This explanation would also account for the failure of antitoxin when adopted too late to prevent absorption in a system too weakened to withstand further calls on its vital processes. The advantages of this treatment are that it acts with more rapidity than any other in arresting the development of membrane, assisting in its detachment, and hastening the disappearance of the bacilli, with a corresponding relief and improvement in the general condition, as notably instanced by the prompt disappearance of the adenitis, one of the most strongly marked objective evidences of toxæmia. The accumulated evidence of Hanseman, Baginsky, Ringer, Washbourn and Goodall, Benda and Monti, agrees with the writer's experience, which inevitably leads to the conclusion that there is an increased tendency to nephritis, cardiac failure, and septicæmia in cases treated with this remedy over what was formerly observed under the old treatment. Recognizing the importance of the older methods of treatment, these should by no means be omitted at the present time. The warnings that under the use of antitoxin there is an increased susceptibility to heart-failure, nephritis, and general septicæmia must be interpreted as indicating that at the earliest indications of cardiac weakness analeptic and stimulating treatment must be commenced and persevered in. Renal activity must be assisted. Every precaution must be taken against sepsis from whatever source that might increase the liability to erythemal and joint pains, evidently of a toxic character and out of proportion in frequency of occurrence to what has been hitherto observed. It must not be forgotten that in diphtheria, as in all other specific fevers, an epidemic may occur of such a malign type, or perhaps in individual cases the disease may be exhibited, from the first onset, in so grave an aspect that no remedy whatever can occasionally avert a fatal issue. To suppose that antitoxin, either with or without other measures, excellent though they may be and however promptly applied, will place the percentage of mortality under such circumstances in a more favorable position than that of enteric or scarlet fever is nothing short of Utopian.—*Medical Press and Circular*, 1895, No. 2910, p. 157.

Dr. Th. Hoyntschak reports an instance in which he used Behring's antitoxin and noticed profuse perspiration, urticaria, pains in hands and feet, swelling of these joints, eruption resembling peliosis rheumatica. Recalling the similar cases of Asch and of Lublinski, he inquires what is the exciter of so evident an infection and how it is that it comes into the remedy? The symptoms point very plainly to an infection.—*Wiener klinische Wochenschrift*, 1895, No. 4, p. 61.

Dr. O. Soltman reports 193 cases. In four months, without antitoxin, 28 of 71 children died, *i. e.*, 39.8 per cent.; in five months, when the majority of cases were treated by antitoxin, 22 of 122 died, *i. e.*, 18 per cent. He notes the occurrence of albuminuria in 26 cases, and in direct connection with the injections 19 times. Exanthemata were frequently observed; for instance, urticaria generally in the locality of the injection, also, six to eight days thereafter, a scarlatiniform eruption resembling a drug-eruption, but to be distinguished from that of scarlet fever. This was generally limited to the back, nates, and lower portion of the abdomen, was not accompanied by rise of temperature, nor followed by desquamation; the scarlet-fever tongue was absent. True scarlet fever accompanied the diphtheria nine, and measles three

times. Post-diphtheritic paralysis, slight palatal paralysis being excepted, was noted five times, four of these being in children who had received this remedy. In three cases after complete disappearance of all local symptoms relapses followed. One child who had been rendered immune became ill three weeks after injection with a genuine but mild diphtheria. Since Behring's antitoxin contains one-half of one per cent. of carbolic acid, in an injection of one hundred and fifty to three hundred minims we have from five-sixths to more than a grain of carbolic acid, which is a maximum dose for an adult. Recognizing the effects of this amount of carbolic acid on pulse, temperature, and kidneys, the author is strongly of the opinion that this antiseptic must be omitted from the remedy.—*Deutsche medicinische Wochenschrift*, 1895, No. 4, p. 53.

Dr. A. L. Mason states that the indications for treatment are clear, and point to such measures as will save and maintain the strength of the patient, with the discriminating use of those local applications which tend to check or neutralize toxic absorption and to prevent invasion of the respiratory tract. Tincture of ferric chloride, oxygen, and alcohol in large doses, have met with professional approval to correct toxæmia and to sustain the flagging heart. They are absolutely ineffectual in cases of the more septic type. The same is true of strychnine, strophanthus, and digitalis. Care must be taken in the administration of food and medicines, both on account of the distress which the patient experiences in his efforts at deglutition and the danger of strangling or of broncho-pneumonia from the entrance of food into the air-passages. Systematic feeding by a soft-rubber catheter passed through the nostril into the gullet sometimes saves life. For local treatment mild carbolized sprays, such as Dobell's lime-water, warm alkaline solutions, chlorine-water, or hydrogen peroxide, the latter in ten or fifteen-volume solution or stronger, once or twice daily for a few days, for the removal of the membrane.

Dr. E. M. Buckingham among other means of treatment places great reliance upon the combination of fresh air and sunlight. For local treatment spraying seems to be the only practicable way of making these applications to children, but it should be done with the greatest gentleness. Hydrogen peroxide is of value, but it has been over-estimated. The fifty-volume spray, while seldom a caustic, is too strong for routine use if the object is merely to clean the mouth and not to exterminate the bacilli. Any appreciable strength is too strong for the nose. It has here the additional disadvantage that it probably penetrates the nose far less than most applications, because it sufficiently fills the nostrils with foam to prevent the passage of a gentle spray. There is no objection to the use of a fifteen-volume solution in the mouth. For the nose insufflations of iodoform are used, first clearing the way, if necessary, with forceps or a spray of sterilized water.—*Boston Medical and Surgical Journal*, 1895, vol. cxxxii. p. 145.

Dr. F. H. Williams states that the strength of the hydrogen peroxide solution which is to be used depends entirely upon the conditions which present themselves; the twenty-five-volume solution may be serviceable, or the fifty-volume solution may be required. Never use force under any circumstance. Once in three hours is sufficiently often for local applications, later once in four hours, or less often. The friction of the solutions chiefly causes the discomfort. It is important that efficient instruments should be

used. The solutions should be of known strength and have a sufficient amount of hydrochloric acid, which, so far as the germicidal action goes, is the active agent rather than the hydrogen peroxide itself. The hydrochloric acid should be in small percentages, one-fifth of one per cent.—about as much as there is in the gastric juice. The pressure of the air for spraying should be about six, or at most eight, pounds to the inch. Cultures should be made from the throat after a few days, and if the bacilli of diphtheria are absent, local treatment, as a rule, may be stopped.—*Ibidem*, p. 160.

The Prevention of Consumptive Disease.

Dr. Benjamin Ward Richardson promulgates the following as a sanitary decalogue: 1. Pure air for breathing is the first rule for the prevention of consumption. 2. Active exercise, outdoor as much as possible, is essential. 3. Uniform climate is important. 4. The dress should sustain uniform warmth. 5. The hours of rest should be carefully regulated by the sunlight. 6. Outdoor occupation is preventive. 7. The amusements should favor muscular development and sustain healthy respiration. 8. Cleanliness in the broadest sense is of especial moment. 9. Every precaution should be taken to avoid colds. 10. The diet should be ample with full proportion of the respiratory foods.—*The Asclepiad*, 1894, No. 42, p. 147.

The Posture of the Head in Accident when the Patient is under an Anæsthetic.

Dr. H. A. Hare has carefully reviewed the work of Howard, and from his studies concludes that the epiglottis is not the cause of the obstruction in arrested respiration in anæsthesia. If, however, the head is extended and simultaneously projected forward, both the tongue and the epiglottis are raised, and the soft palate is so drawn as to permit of free breathing through the mouth as well as the nose. As to the question of the various methods of performing artificial respiration, that of Sylvester is believed to be by far the best. It is, however, vitally important to have an assistant grasp the feet and hold them motionless, since in this way the extension and upward traction of the arms above the head elevate and dilate the chest. This particularly is the case in children and persons of small weight, as the lower segment of the body readily follows the chest in its upward movement.—*Bulletin of the Johns Hopkins Hospital*, 1895, No. 46, p. 1.

Oil of Turpentine as a Hæmostatic.

Dr. J. Sasse recommends this remedy applied upon cotton to check the bleeding after extraction of teeth. In a case of scorbutus it was used in a two per cent. solution as a mouth-wash, and later undiluted, the gums being painted with it every hour, and a small quantity was given internally. In one instance a vesical hemorrhage, which had resisted salol, boric acid, and uva ursi, was successfully treated by dessertspoonful doses of one-half of one per cent. emulsion of the drug.—*Therapeutische Monatshefte*, 1895, Heft 2, S. 83.

MEDICINE.

UNDER THE CHARGE OF

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The Blood in Chronic Cyanosis.

In studying the blood of eight cases of chronic cyanosis from congenital heart-disease, Vacquez (*Comptes Rendus de la Société de Biologie*, March 8, 1895) found marked changes. In all cases the number of red corpuscles per cubic millimetre was increased, the increase being in direct ratio to the intensity of the cyanosis.

Besides the increase in the number of the red corpuscles, an increase in size was also noted, though not until the cyanosis had become quite marked; in fact, in the earlier years of cyanosis the increase in number was only relative.

In individuals of from twelve to twenty years of age blood-counts of from 5,600,000 to 6,300,000 were found, the diameter of the corpuscles varying from 7.9 μ to 12 μ.

Vacquez does not think that the increase in number of the corpuscles was parallel to the increase in diameter, but thinks that both are due to the same cause.

At the same time with the increase in size and number of the corpuscles there is an increase in the amount of hæmoglobin in each individual corpuscle, so that the hæmoglobin does not show its normal relation to the number of corpuscles.

The question as to whether the increase in size of the corpuscle or the increase in hæmoglobin is the primary process cannot well be answered. The process has been explained on the grounds that in cyanosis the supply of oxygen carried to the tissues is insufficient, and that the corpuscular new-formation is compensatory.

Gibson (*Lancet*, January 5, 1895) reports a case of a boy, aged eight years, whose red blood-corpuscles were 8,470,000 per c.cm., and the hæmoglobin 110 per cent. He refers to other instances in which this increase in the blood-corpuscles has been noted, and suggests the following interesting explanasion: "In venous stasis the corpuscles are insufficiently oxygenated; they cannot perform such an active part as oxygen-carriers, and they cannot yield too much oxygen to the tissues. It must further be remembered that in cyanosis there is less metabolism in the tissues, and therefore less waste produced. In a word, the functions of the corpuscles being lessened, the tear and wear which they undergo are reduced and the duration of their individual existence increased. The number of the corpuscles must in this way be pro-

portionately augmented, and this must lead to the numerical increase as well as to the high percentage of hæmoglobin, until a balance is struck between the production and the destruction of the blood-corpuscles."

Early Delirium in Typhoid.

Aschaffenbourg (*Archives de Neurologie*, March, 1895) reports the case of a female, aged thirty years, who entered the hospital in a state of great agitation, with disordered ideas of a very marked character, so that she was incapable of understanding what was said to her. She had insomnia, hallucinations, and walked as if drunk. The pulse was rapid.

The hallucinations, as well as the agitation and the intellectual obtuseness, became more and more marked, and reached their height about the fifth day. At this time, the evening temperature being 38.4° C., typhoid fever was suspected, and the symptoms soon became typical. The delirium disappeared, but the patient gradually sank and died in collapse. The autopsy confirmed the diagnosis.

Out of seventeen cases of early delirium in typhoid in the literature, in seven the delirium preceded the fever—the latest period at which it was observed being the end of the first week, the delirium lasting, as a rule, only a few days. Six patients of the seventeen reported died. Early delirium in typhoid presents itself under two forms, both of which have as a common symptom great intellectual obtuseness.

In the one form we have delirium similar to that seen in the later stages of the disease. The patients imagine that they are being electrified, etc.; they are restless and at times violent, or perhaps may be in a condition of torpor. Very often there is a primary stage of agitation followed by a stage of torpor.

In the second form there is absolute confusion both of the ideas and actions. The patients sing, pray, or dance, and may be either gay or depressed. As to causation, Aschaffenbourg inclines to the view that the typhoid bacilli secrete a poison which has the power of diminishing the body-heat and exciting the cerebral cortex like a narcotic alkaloid.

Hæmoglobinuria from Muscular Exertion.

Lee Dickinson (*Clinical Society's Transactions*, 1894) reports three interesting cases of hemoglobinuria from exertion. All of the cases occurred in young, healthy individuals after severe exertion, the hæmoglobinuria being transitory and unaccompanied by any other symptoms, except in one case where there was slight frequency of micturition.

The author points out that there exists a condition which may be called functional hæmoglobinuria, in which there seems to exist an abnormal liability of the blood-corpuscles to destruction, the hæmoglobinuria occurring on very slight exertion.

In his cases, however, the normal blood was destroyed, the hæmoglobinuria here produced being comparable to that occurring in burns and after certain poisons.

A case is mentioned in which, in a boy dying during a run, the only patho-

logical lesion found was a disintegration of the red corpuscles; the author suggests that had the boy lived long enough he would have presented hæmoglobinuria, and that his cases differed from this only in degree.

The hæmoglobinuria in these cases is explained by the destruction of the red corpuscles in the circulation and the subsequent elimination of the hæmoglobin by the kidneys.

How the blood-disintegration occurs is not fully known, but carbonic acid is probably largely concerned in the process, as it is known that this gas, in excess in the system, may profoundly modify the blood and the tissues associated with it. Cyanosis did not, however, accompany the over-exertion in all the cases.

Leucocytosis in Hypertrophic Cirrhosis of the Liver.

In a short note on this point Hanot and Mennier (*Comptes Rendus de la Société de Biologie*, February 1, 1895) call attention to the fact that they have always regarded this disease as of an infectious nature, and consider the leucocytosis as further evidence of infection.

They cite five cases of hypertrophic cirrhosis with chronic icterus, in each of which blood-counts were made on various occasions, and an excess of leucocytes always found. In none of these cases was there any extra hepatic inflammation which could cause a leucocytosis.

The examinations showed that the number of leucocytes per cubic millimetre varied from 9000 to 21,800; that is to say, an average of 15,000.

The blood-count of a number of cases of alcoholic cirrhosis showed an average of 6600 leucocytes per cubic millimetre.

The authors conclude that hypertrophic cirrhosis is the only disease of the liver in which a leucocytosis is present, except carcinoma, in which they have found as many as 40,000 white corpuscles to the cubic millimetre.

Confusion between Distended Gall-bladder and Movable Kidney.

Henry Morris (*British Medical Journal*, February 2, 1895) points out that though on first thought there is not much resemblance between these two affections, the one is often confounded with the other.

The fact that both affections are much more common in women is noted, and the fact that the right kidney is much more movable than the left increases the chances of error. The symptoms common to both are pointed out.

Both may present as a tumor in the right hypochondriac and umbilical regions, and the physical characteristics of the tumor from either cause may be similar. The tumor may be movable in either case, and in either case the percussion-note overlying it may be resonant or dull. Both diseases may cause dyspeptic symptoms or give rise to colic. Either may cause jaundice, gastric intestinal catarrh, or even peritonitis. In neither case is the condition of the urine a reliable guide. The conditions of the gall-bladder, which tend to render the confusion more probable, are elongation with a reniform outline, mobility, or downward displacement of the liver, with a retroflexed gall-bladder under the viscus, causing the displaced bladder to feel like a loin rather than an abdominal tumor.

A tilting of the kidney from behind forward, bringing its anterior end just under the abdominal parietes, or adhesion of the kidney to the right lobe of the liver might cause the kidney to resemble gall-bladder.

To distinguish between the two conditions it must be remembered that a distended gall-bladder, as well as the kidney, is a frequent cause of *movable* abdominal tumor. The range of motion in the gall-bladder is, however, always in the arc of a circle, the centre of which is a point beneath the right lobe of the liver. The history of a distinct attack of jaundice is an important factor in diagnosis. A distended gall-bladder can generally be felt, whereas a movable kidney often cannot. The gall-bladder, if distended with stones, is much harder than the kidney.

Variance in size of the tumors is of no importance, unless with the variance in size there is the history of the passage of large quantities of urine.

An attempt should always be made in these cases to pass the hand behind the tumor and palpate the kidney.

Diphtheria Antitoxin.

Kuntzen (*Deutsche medicinische Wochenschrift*, 1894, No. 49), in reporting the results of the use of Behring's antitoxin in diphtheria, emphasizes some things worthy of general attention. In the first place he criticises the custom of classifying cases as "mild," "moderately severe," and "severe," since the prognosis often varies from hour to hour. Behring and his collaborators laid special stress on the value of the serum in cases treated early; and in the report on 220 cases by Ehrlich, Kossel and Wassermann, the latter classified their cases according to the day of the disease on which the treatment was begun, showing that the death-rate, which was 0 in cases treated on the first day, increased from 3 per cent. on the second to 14, 23, 43.5, etc. If future results are published in this way, the value of the remedy can be more definitely determined. Kuntzen himself treated twenty-five cases and lost only three. Five required tracheotomy, and of these, two died. Kuntzen followed Behring's method of treatment, giving 600 immunizing-units to children on the first or second day of the disease; to children coming under treatment later, or adults, twice that dose.

Hager (*Centralblatt für innere Medicin*, 1894, No. 48) reports twenty-six cases of diphtheria treated with Behring's serum in private practice. The diagnosis was controlled by bacteriological examinations. One case proved to be scarlatinous and ended fatally. Of the twenty-five cases of true diphtheria one died. This was a child of eight months, almost moribund when first seen, and requiring tracheotomy before the injection was made. The child lived four days; the local condition improved, but death occurred with increasing weakness and with bronchitis. The other cases were classified as follows: Mild, 8 cases; moderately severe, 6 cases; severe, 10 cases. The dose of antitoxin varied from 250 to 2500 or more immunizing-units, on the average 1000 to each case. The usual course of the disease after the injection was so characteristic that Hager could not doubt the effect of the remedy. A day after the injection the general sensation improved; after two days the fever usually subsided; after three days the pulse was less frequent. After one day the membrane appeared sharply defined, and usually by the fourth

day it had disappeared. Serious consequences were not observed. The local reaction was slight. In five cases an urticarial erythema occurred around the point of injection, in one case at a distant point. Thirty-five children in infected families received prophylactic treatment. Of these, four acquired diphtheria. One recovered after an injection of 500 units, two without treatment (the treatment of the fourth is not mentioned).

Hager calls attention to the importance of using the serum in private practice, not only on account of the possibility of beginning early, but also on account of the lessened danger of severe complications (especially streptococcus infections) so common in hospitals.

MOELLER (*Ibid.*) reports briefly the results of the treatment of diphtheria with and without serum in the Magdeburg (Altstadt) Hospital. The serum was not used in mild cases, nor in cases brought in moribund. Owing to this and the fact that mild cases were admitted to the hospital in unusually large numbers, the author does not feel permitted to draw conclusions. Of the cases in which tracheotomy was performed, those treated with serum had a mortality of 39.6 per cent., and those without it, 55.6 per cent. The death-rate of the former is the lowest yet reached in the institution, but it is drawn from a comparatively small number of cases (41).

The author thinks that in comparing results those of tracheotomized patients are most reliable; but considering the almost hopeless condition in which this operation is often done, the conclusion does not seem a proper one.

PERFORATION OF THE DIAPHRAGM IN GASTRIC ULCER.

L. PICK, in reporting a new case, gives an analysis of all cases published in which ulcer of the stomach caused perforation of the diaphragm (*Zeitschrift für klinische Medicin*, Bd. 26, H. 5 and 6). In all, twenty-eight cases were discovered; but the author thinks that other cases, proved by autopsies, have been observed, and also that in certain cases of so-called idiopathic suppurative pleurisy or pericarditis gastric ulcer was the cause. (In regard to this, however, Biach has shown that in 918 cases of pyopneumothorax only two were due to ulcer of the stomach.) According to Pick, perforation of a gastric ulcer into the thoracic cavity is twice as frequent as adhesion to and perforation of the anterior abdominal wall. The commonest outlet is in the pleura or lung, and affected the left pleura nine times, the left pleura and lung seven times, and the right pleura once. In the latter case the perforation was consecutive to subphrenic abscess. The pericardium was affected alone in six cases, and the pericardium and heart in four. In one case the mediastinum was affected, and in the author's case the anterior thoracic wall, with the formation of a tumor in that part. In twenty cases the perforation was direct, and in eight indirect, or following subphrenic suppuration. In this conclusion the author differs from Brinton, who studied a smaller number of cases. Pick's analysis shows that the rare ulcers of the fundus are much more likely to rupture into the thorax than those of all other parts of the stomach, but that the occurrence of thoracic complication depends largely on the existence of old adhesions and alterations in the position of the thoracic organs. The exciting cause of the perforation in most cases is mechanical, either by distention from food or gas, vomiting, straining at stool, etc.

Death is usually due to complications, rarely to shock. Perforation of the heart does not cause instant death, patients having lived as long as three or four days after hemorrhage began.

Sulphuretted Hydrogen in Dilated Stomach.

Zawadzki (*Centralblatt für innere Medicin*, 1894, No. 50) reports four cases in which sulphuretted hydrogen was produced in stomachs which were dilated, but contained considerable quantities of free hydrochloric acid—as much as 0.2 per cent. This occurred only when the stomach-contents were retained more than twenty-four hours. Notwithstanding the large amounts of H_2S in the stomach, none appeared in the urine. This fact, and the absence of symptoms of intoxication, the author explains by failure of absorption, or by a neutralization of the poisonous products of putrefaction. Part of the H_2S is removed by eructation—in one case the patient had to be isolated on account of the odor—part passes on into the duodenum. The exact cause of the putrefaction in such cases must be left to future investigations.

Facial Paralysis.

L. Mann (*Berliner klinische Wochenschrift*, 1894, No. 53) calls attention to the fact that in facial paralysis of peripheral origin the muscles are not equally affected. In two cases, undoubtedly peripheral, the orbicularis oris remained intact while all the other muscles supplied by the facial were completely paralyzed. The electric reactions of the orbicular muscles were practically normal, the patients could contract them at will; but on account of the paralysis of the other muscles of the face the angle of the mouth was drawn to the sound side in both cases. Opening the mouth was accomplished by the muscles of the unaffected side. Mann had previously observed in facial palsy that the orbicularis palpebrarum, analogous in function to that of the mouth, was not so seriously affected as the other muscles. The difference was especially clear in cases with partial reaction of degeneration. In recovery the orbicularis recovered earlier than the other muscles, so that the patients could close the eye long before they could wrinkle the forehead. Whether a similar early recovery of the orbicularis oris takes place the author has failed to observe; but Landois and Mosler have described a case in which the functions of the orbicularis of the mouth and eye returned before the others in facial paralysis. Hitzig has observed a relatively early regeneration of the orbicularis palpebrarum, and both he and Bernhardt hold that the orbiculofrontal fibres are less severely affected than the other parts of the facial nerve. As regards the frontal, the author differs decidedly from these observers. At Mann's request, Dr. Cohn, assistant in Mendel's clinic, paid special attention to the subject, and found four cases of facial palsy (the number examined not stated) with reaction of degeneration, in which the orbicularis oris was not affected. In three cases the orbicularis palpebrarum was not affected, or was less severely affected than the muscles of the face generally; and in two cases the levator labii superioris. In a fifth case the orbicularis palpebrarum and the levator labii superioris were intact and the orbicularis oris paralyzed. According to Gowers, preservation of the function of the orbicularis oris in

facial paralysis indicates a central lesion; but the cases now reported show that the rule is not absolute. In these cases the electric reactions indicated peripheral disease. In two cases the paralysis followed ear-disease, and in another an operation on the mastoid process. Mann mentions paralysis of the radial as an example of peripheral paralysis in which not all the fibres are always affected, the supinator longus escaping not rarely. This may be due to the fact that the branches come from different centres. If this explanation be correct, it can, perhaps, be applied to the cases of facial paralysis in which the orbicularis of the mouth or eye escapes. According to experiments of Mendel, the fibres for the orbiculo-frontal part of the facial arise from the oculomotor nucleus, and Tooth and Turner in a case of disease of the facial nucleus found those fibres intact. Hughlings Jackson found paresis of the orbicularis palpebrarum in a case of disease of the oculomotor nucleus.

These observations require further confirmation before they can be applied to cases like those of Mann and Cohn, since the extent of the oculomotor nucleus is not yet exactly defined, and it is possible the relations are not constant. In conclusion, Mann intimates that in his opinion a peripheral origin may have been present in the cases of congenital facial palsy described by Schultze and others.

Thyroid-feeding in Goitre.

Bruns (*Beiträge zur klinischen Chirurgie*, xiii.) reports the results of the treatment of sixty cases of goitre with thyroid. Cases of benign parenchymatous goitre were put under treatment without selection. Cystic cases and those of malignant disease were excluded, as were also cases of exophthalmic goitre, in which, as has been shown, thyroid-feeding makes the symptoms worse. Instead of raw thyroid, tabloids were used in the dose of two daily to adults, one to children. By this method of administration intoxication is least likely to occur. Unpleasant symptoms, such as palpitation of the heart, nausea, diarrhœa, tremor, headache, etc., were treated by temporary withdrawal of the remedy. The duration of treatment was from three to four weeks on the average. In young children complete recovery was the rule. In older children marked diminution in the size of the goitre was observed with cessation of symptoms. In adults recovery was rare and less common in proportion to age. Complete return of the thyroid to its normal size is not to be expected later than the twentieth year. In some cases in which tracheotomy seemed necessary thyroid-feeding removed the pressing symptoms, and in cases of partial resection of the gland with hypertrophy of the remaining part the enlargement was reduced by treatment. Mild relapses were seen only three times, and in each case rapidly relieved by renewal of treatment.

Uric Acid and Leucocytosis.

The theory of Horbaczewski, that uric acid is a product of the breaking-down of leucocytes, and that its excretion in the urine goes on parallel with the dissolution of leucocytes, is so convenient that one can easily understand how it has been accepted by many as though well grounded. At the same time, both the chemical theory and the alleged clinical facts on which Hor-

baczewski based his theory can be criticised. RICHTER has recently investigated the clinical aspect of the matter in Senator's clinic, with results which are unfavorable (*Zeitschrift für klin. Medicin*, Bd. xxvii., H. 3 and 4). The material used was derived from infectious diseases in which leucocytosis usually occurs; in diseases of the blood and cachexias, with increase of leucocytes, and in experimentally produced conditions with either increase or decrease of leucocytes. The uric-acid estimations were made by the Ludwig-Salkowski method. It was soon discovered that one of the conditions which has been asserted as tending to vitiate the results was in reality present, namely, that uric-acid excretion varies so much in health that it is difficult to avoid erroneous conclusions. It was found, for example, that whereas the results in the early part of a particular investigation seemed to bear out Horbaczewski's theory, prolonged observation showed that the excessive excretion was constantly high in that patient, so that the supposed increase during leucocytosis did not exist. In a case of leukæmia the excretion of uric acid was not excessive, though apparently higher than normal, but there was no parallel between excretion and leucocytosis. Injections of spermin caused a fall in the number of leucocytes, and the amount of uric acid also fell in the beginning, although not in the same proportion, but later rose again. Two other attempts gave equally unfavorable results. A case of severe anæmia treated with spermin showed an increase of leucocytes without corresponding increase in the uric acid. Nuclein gave results similar to those obtained by Horbaczewski. A moderate increase of the leucocytes was observed, with marked rise of the uric acid. Richter's conclusion is that Horbaczewski's theory is of very limited application. Two factors are effective at present in preventing us from more accurately studying the question. One is the impossibility of deciding, when a variation in the number of leucocytes occurs, when dissolution of corpuscles begins and how extensive it is; the other is our inability to conclude, from the excreted uric acid, the amount formed in the body.

EXPERIMENTAL ALBUMINURIA.

SEELIG has recently examined the mode of production of albuminuria after compression of the thorax (*Archiv für exper. Pathologie und Pharmakologie*, Bd. xxxiv., Heft 1 and 2). He had formerly supposed that albuminuria was due, in the condition mentioned, to lowering of the blood-pressure, which could be demonstrated in the carotids. This view seemed to be supported by the fact that here, as in ligation of the renal artery, the excretion of albumin took place in the glomeruli. The author's investigations, however, reveal an essential difference in the microscopic appearance of the kidneys in the two conditions. After temporary ligation of the artery there is hyperæmia of the cortex, with excretion of coarse albuminous masses stained with blood-coloring matter. After compression of the thorax there is anæmia of the cortex, with fine and colorless albuminous granules. From this result Seelig believes that the disturbances of the kidneys from compression of the thorax are so slight as to be probably within physiological limits. Further experiments showed that sulphindigotate of sodium was excreted as rapidly as normal during the existence of the albuminuria from compres-

sion, but that arterial ligature lasting only fifteen minutes caused slow and imperfect excretion of the indigo-salt, lasting for a day. Compression of the thorax is the only method by which experimental albuminuria can be produced without extensive disturbances of the renal circulation.

The Retention of Water in Fever.

Glax furnishes a new contribution to this subject, on which he has written before, based on examinations in fifty-three cases of typhoid fever (*Centralblatt für innere Medicin*, 1895, No. 6). Only those patients whose urine could be collected, and who had not profuse diarrhœa, were used for the investigations. The treatment consisted in cool bathing and galvanization of the neck. The quantity of water ingested was noted, as well as the amount of urine passed. As the result of the observations Glax affirms that retention of water occurs in fever, at least in typhoid. The water thus retained in the tissues is excreted in convalescence, causing polyuria. This sometimes occurs suddenly along with the decline of temperature; usually the urine increases gradually, but sometimes diuresis begins during fever, and can be looked on in such cases as a sign of speedy defervescence. Sometimes diuresis is delayed until a late stage of convalescence. In temporary fall of temperature the amount of urine may increase, and *vice versa*. In case of chill followed by fever the urine is increased for a short time. The cause of diminished excretion during fever Glax thinks is low blood-pressure. Corresponding to the theory, diuresis is not diminished in the beginning, is lowest in the second and third week, and rises again with increase in the force of the heart. If the heart is not weakened by the fever, no fall in the amount of urine is observed. If the ingestion of water is increased, excretion is not correspondingly increased until defervescence, and excretion during the febrile stage is better in proportion as ingestion is limited. Glax combats the "washing-out" treatment of Cantani and Sahli in infectious diseases. He also claims that the idea of reducing temperature by drinking large quantities of cold water is wrong in principle, holding that high temperature is more likely to be lowered by lessening the amount of water. In his own cases of typhoid fever, in which the amount of liquid ingested varied from 1000 to 1400 c.cm., the temperature was relatively low. This was in cases treated during several years, so that Glax does not think the low temperature a peculiarity of the epidemic.

Angina and Rheumatism.

Buss gives a very comprehensive exposition of the relations of angina and rheumatism (*Deutsches Archiv für klin. Med.*, Bd. liv., H. 1) in which the literature of the subject is discussed from several aspects and a large number of valuable personal observations utilized. From both sources it is clearly shown that angina and articular rheumatism often coincide. Explanations of this differ, however, largely because the coincidence of time is not absolute; but one disease appears before, with, or after the other. In many cases there is pain in the joints without swelling. Many French authors look on the angina as the expression of a "rheumatic diathesis." Many English authors, on the contrary, look on the angina as the point of

entrance of the rheumatic poison, a view more in accord with modern knowledge of infectious diseases. After describing the anatomical peculiarities of the joints and their tendency to become affected in infectious diseases, a number of examples are cited of localization of micro-organisms in the joints. The author then takes up the subject of rheumatism as an infectious disease, and after quoting authorities mentions a number of interesting examples of house-infection in rheumatism. Prinzing found, for example, that most cases of rheumatism occur in the old parts of towns, and that in these certain houses and rooms have a predilection. Edlefsen made similar observations; rheumatism occurred less frequently in basement-rooms and new houses than in older ones. Fiessinger found that in Oyonnax, a town with five hundred houses, half of all the cases of rheumatism in a number of years occurred in ten houses in one small street. Bacteriological examinations of the joints and the exudates in acute articular rheumatism have given variable results, many being negative. This may be due either to the fact that the organisms present in the beginning had disappeared by the time the examinations were made, or, as happened in tubercular joint-disease, that they were not free in the exudate. The fact that the exudate in rheumatism is seldom purulent does not prove that it is not due to the action of bacteria, since many pyogenic organisms, either from lack of virulence or from insufficient number, may be unable to produce suppuration, though able to cause serous effusion, as is seen in the pleura. The author then considers the protecting function of the tonsils, which is briefly but clearly described, and goes on to detail some of the evidence regarding the causes of anginas and their complications. The result of the material examined proves: 1. That during or after angina pain or swelling of the joints, apparently rheumatic, often occurs. 2. In the exudate of the angina and in the synovial membrane and exudate of acute rheumatism similiar pathogenic micro-organisms occur. 3. General infection of the body, with disease of the joints, can take place from disease of the pharynx or tonsils. In view of these facts the relation of angina and rheumatism becomes clearer, and at the same time different from what was formerly supposed. Since we know that angina is an infectious disease we can no longer look on it as the evidence of a "rheumatic diathesis" when it appears with the articular affection; rather must we look on the latter as the result of a general infection in which the micro-organisms have entered by the pharyngeal mucous membrane, and especially by the tonsils.

In conclusion, Buss asserts his belief that acute articular rheumatism is due in most cases to pyogenic bacteria with lessened virulence. Among these Fränkel's pneumococcus and Friedländer's bacillus may be included. Rheumatism is, according to this view, a disease like osteomyelitis, endocarditis, and pneumonia, due not always to one and the same bacterium, but capable of being caused by several distinct organisms. It is highly probable that apparently identical clinical pictures may be produced by different organisms, as in the case of the other diseases mentioned. The pneumococcus rheumatism, however, which can occur with or without pneumonia, seems to be especially prone to purulent exudates. The tendency of recent investigations is to deny the specific nature of rheumatism, and to restore to the joint-complications of acute infectious disease the convenient and familiar term which many authors have tried to abolish.

SURGERY.

UNDER THE CHARGE OF

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CARCINOMA OF THE DESCENDING COLON.

The following interesting case is reported by HERBERT ALLINGHAM (*The Medical Press and Circular*, 1894, No. 21): A man, aged thirty years, had been suffering from complete obstruction of the bowels, with vomiting and abdominal tympanites, for ten days before admission to the hospital. The abdomen was opened, and the intestines were found to be enormously stretched, so much so that the author was afraid to explore the cavity on account of the danger of rupturing them. The cæcum was brought into the wound and incised, when two quarts of fecal matter escaped. It was decided to establish an artificial anus. This was done by securing the cæcum in the abdominal wound. The patient did well after this operation. Sometime later it was decided to perform an exploratory cœliotomy to determine the cause of the obstruction. Accordingly an incision was made in the left linear semilunaris. On examining the descending colon a hard, tight stricture was discovered at about its middle portion. Four inches of the bowel were resected, including the diseased portion, and the ends approximated after the method devised by Mayo Robson. This operation was entirely successful, and three weeks later the artificial anus was closed by freshening the edges, freeing the bowel from the abdominal wall, and uniting each structure separately with sutures. The patient left the hospital apparently cured. The growth was found upon microscopic examination to be a carcinoma. A few months later the symptoms returned, and, after employing various measures without benefit, the abdomen was again opened. The peritoneum was found to be studded with nodules, and there were masses in the walls of the small intestine and in the mesentery. The abdomen was closed, and the patient recovered from the operation, but died in about six weeks later, and ten months after the first operation, from general metastatic deposits.

GLIOMA OF THE CEREBRUM; REMOVAL; RECURRENCE. SECOND OPERATION; RECOVERY.

The following case of tumor of the brain, under the care of DR. H. C. WOOD, and operated upon by DR. J. WILLIAM WHITE, is reported in the *University Medical Magazine*, 1895, vol. vii., No. 4, by Alfred C. Wood: The patient,

a man, aged twenty-eight years, first observed occasional twitchings in the left hand in August, 1892. These spasms recurred at irregular intervals, but gradually increased in frequency and severity. Consciousness was preserved during the attacks at first, but later was usually lost. On two occasions the convulsions were general. When the patient first came under observation there was no weakness of the left arm, but a slowly progressing loss of power was soon observed in this member. There have been occasional attacks of vomiting and of pain in the head; the latter, at first but rarely felt, became frequent and severe. Diplopia was complained of, and an examination of the eye-grounds revealed double optic neuritis with retinal hemorrhages and large and tortuous retinal veins. The case was thought to be one of glioma or sarcoma involving the motor area of the right side, affecting principally the arm-centre. January 24, 1894, after the usual preparations for an aseptic operation, Dr. White trephined the skull over the arm-centre of the right side, and found the dura tense and bulging. On incising the dura a tumor was seen beneath, and was removed as completely as possible after enlarging the trephine-opening with the rongeur forceps. The patient did well after the operation, but after a time the scalp over the seat of the former wound was found to be elevated. As this swelling gradually increased in size, its removal was decided upon. Accordingly, in May, Dr. White again raised the flap made at the previous operation, enlarged the opening in the skull, and removed the growth, which was similar in character to the first. Convalescence was uninterrupted. All symptoms disappeared immediately after the first operation, and the patient remains well. Microscopic sections of the tissue removed showed the appearances of a glioma.

The interesting features of this case are:

1. The accurate location of the growth clinically.

2. The precision with which the tumor was exposed by the trephine-opening.

3. The immediate and complete left-sided paralysis, followed by perfect restoration of the normal condition in the face, and the return of a very fair degree of function in the leg, while motion in the arm has failed to improve markedly, showing that the arm-centre has been probably almost entirely removed, while the face- and leg-centres were but slightly encroached upon at the operation, and, although suffering temporarily from the traumatism, have preserved their integrity.

4. The recurrence of the growth, followed by its successful removal, the patient remaining well until the present time, now seven months after the last operation and eleven months after the first.

Intestinal Obstruction Caused by a Pressure-band.

Robert Jones details (*British Medical Journal*, 1894, No. 1743) the case of a girl, aged fourteen years, who suffered from violent abdominal pain and severe vomiting, becoming stercoraceous. The history was that for the four years preceding the patient had had what were called bilious attacks. On account of the urgency of the symptoms it was decided to perform exploratory incision. Upon opening the abdomen the visceral peritoneum was found dotted with lymph. The cæcum and portion of the small intestine were found

collapsed. Finally a distended loop of small intestine was found immediately below which was a band half an inch wide; this was divided. It was not deemed wise to make any extended examination to determine the origin of the band. The subsequent course of the case was one of uninterrupted recovery.

Sarcoma Growing at the Seat of a Recent Fracture.

Griffiths records (*British Medical Journal*, 1894, No. 1743) the case of a man, aged twenty-one years, who sustained a fracture of the femur at the junction of the middle and lower thirds. This was treated in the usual manner, and at the end of five weeks a plaster-of-Paris bandage was applied. At the end of two weeks this was replaced by a linen bandage; at this time the fracture seemed to have done well in every respect. Three weeks later, ten weeks after the accident, a swelling was observed at the point at which the bone had been broken. The tumor rapidly increased in size, the superficial veins were prominent, and the limb very œdematous. The patient gradually sank, and died about six months later. The tumor was removed, post mortem, and was found to weigh nearly twenty-five pounds. Microscopic examination showed it to be a spindle-celled sarcoma, evidently having originated in the periosteum. There was no evidence that a central sarcoma had existed prior to the fracture.

Hydatids of the Femur in the Site of an Old Fracture.

Eustace reports the following unusual case (*British Medical Journal*, 1894, No. 1743). A man, aged twenty-five years, received a fracture of the shaft of the right femur at the junction of the upper with the middle third of the bone. The patient got about again at the end of six months. Two months later the femur broke spontaneously at the site of the former fracture, and it was noted that a swelling had occurred at the point of fracture. Four months later the patient was brought to the hospital. At this time he was emaciated and weak. A round fluctuating tumor separated the ends of the bone, the slightest movement of which caused severe pain. The hypodermatic syringe gave negative evidence.

An exploratory incision was made which revealed the presence of hydatid cysts. The whole shaft of the femur was found to be involved. On account of the grave condition of the patient hip-joint amputation could not be considered. Further operative interference was therefore abandoned, and during the next six weeks the patient's condition was improved by careful nursing and feeding. Amputation through the hip-joint was then performed by a modification of Wyeth's method. Instead of encircling the limb with the elastic ligature a piece of elastic tubing was twisted in the form of a figure 8 about each skewer. A modified circular operation was then performed. The hemorrhage was entirely controlled. Before beginning the operation a catheter was introduced into the rectum and three pints of a one per cent. salt solution were slowly introduced. The patient's death, which occurred the next day, the author does not attribute to the operation directly, but to the lateness of its performance.

The Pathology of Paraplegia in Vertebral Caries, with the Indications for Operation.

William Thorburn, in a lecture on the surgery of the spinal cord and its appendages (*British Medical Journal*, 1894, No. 1748), gives the following summary:

Paraplegia may be produced in one or other of the following ways:

1. Mere kyphosis is not usually competent to produce paraplegia.

2. Sudden paraplegia may result in rare instances from fracture of carious vertebræ. The frequency of this occurrence is, according to Kraske, about two per cent. of the total number of paraplegias caused by vertebral caries.

3. Still more infrequent causes are the bursting of an abscess into the spinal canal, hemorrhage into the canal, and displacement of bony sequestra which press upon the cord.

4. The most usual cause of paraplegia is pressure by granulation-tissue.

5. In a few cases true tuberculous periarteritis is found within the cord, generally in association with tuberculous lepto-meningitis.

In regard to the prognosis, the author says: "My own experience is, that nearly all cases will recover if kept fixed in the recumbent position for a sufficiently long time, but the time required may be very prolonged." Cases in which the paraplegia is due to intramedullary tuberculous periarteritis can hardly be expected to get well, and those in which pressure has arisen from fracture of the carious bones are not likely to improve to any great extent. Equally unfavorable are some of the other rare varieties of paraplegia.

The following indications for operation are given:

1. A steady increase in symptoms in spite of favorable conditions and treatment.

2. The presence of symptoms which directly threaten life.

3. The persistence of symptoms in spite of complete rest is the indication which has been most commonly adopted.

4. In posterior caries (caries of the arches) operation is clearly indicated, as here we can readily both treat the paraplegia and remove the whole of the tuberculous tissue.

5. The existence of severe pain if the patient is being exhausted thereby.

6. Children, as a rule, yield better results than do adults.

Contra-indications: The presence of active tuberculous changes in other organs. Macewen holds that we should not operate in the presence of pyrexia. The exception to this would be if the cause of the pyrexia could be removed by operation. General meningitis will probably prove fatal whether an operation be performed or not. Cases of fracture of carious vertebræ are manifestly unsuitable for laminectomy, and most paraplegias of sudden onset will fall into this category.

Extirpation of the Parotid after the Method of Prof. Schüller.

Mandowsky reports in the *Aerztlichen Praktiker*, 1894, No. 33, a case of tumor of the parotid gland, and describes the method employed by Prof. Schüller in removing these growths. The possibility of removing the parotid entire is still a disputed question, but it is admitted by all that the operation

is at least one of the most difficult in surgery. This is due to its intimate association with large and important bloodvessels and nerves, and also to the fact that the gland dips deeply into the retromaxillary fossa. The author condemns the ligation of the common carotid, not only because it is an operation not without danger, but also because it will not control the hemorrhage. The same remarks apply to the preliminary ligation of the external carotid. Much more useful is the method proposed by Van Langenbeck of catching each vessel as it is met, applying a double ligature and cutting between, or by applying prophylactic ligatures and provisional constriction of the vessels in the neighborhood of the tumor. The operation can be made almost bloodless. It is also advised in isolating the tumor not to work from all sides, but from above downward and from before backward. The case described is that of a woman, forty-eight years of age, with a parotid tumor removed in this way, securing the vessels with a double ligature and cutting between. Upon histological examination the tumor was found to be an alveolar carcinoma. The patient was discharged at the end of three weeks, the wound being entirely healed.

The Limits and Value of Urethroscopy.

Casper concludes an article on the above subject as follows (*Annales des Maladies des Organes Genito-urinaries*, No. 9, 1894):

1. In regard to the utility and value of the urethroscope, the principle of external illumination is far superior to introducing a light into the urethra.

2. The urethroscope is, in many cases, of distinct diagnostic and therapeutic value, and cannot well be dispensed with.

3. Owing to anatomical and physiological reasons and the mechanical conditions which result therefrom, urethroscopy is kept within certain limits, beyond which the interpretation of the urethroscopic images becomes impossible.

4. Posterior urethroscopy for diagnosis and therapy is only justified in a small number of exceptional cases.

Vicious Callus of the Upper Extremity of the Humerus, and its Operative Treatment.

Lejars reports two cases illustrating this condition, and quotes others already recorded (*Revue de Chirurgie*, 1894, No. 8). The first patient was a boy, sixteen years of age, who sustained an injury of the right shoulder on the 12th of May. In June he applied at l'Hôpital Necker, when subcoracoid dislocation of the humerus was diagnosticated, and an unsuccessful effort made at reduction by Kocher's method. Further study showed the case to be one of separation of the upper epiphysis of the humerus. There was a marked loss of function. The second patient was a woman, aged thirty-four years, who sustained a fracture of the surgical neck of the humerus. Owing to a persistent and violent delirium it was impossible to keep the fragments in proper position, and union occurred with a deformity very similar to the preceding case. Both patients were operated upon with satisfactory results.

From a study of reported cases and those personally observed the author

has arrived at the following conclusions concerning vicious callus at the upper extremity of the humerus:

1. It is produced by a separation of the superior epiphysis of the humerus or by certain fractures of the surgical neck of the same, causing a specific deformity of the shoulder, simulating in certain points a luxation. The inferior fragment is carried upward and inward; there is a certain flattening, a deviation of the axis of the arm, and a subcoracoid prominence.

2. The primary reduction of the deformity is absolutely necessary if one wants to preserve the function of the member; it is also extremely difficult. The object must be obtained by all means, and it will usually be advisable to cut down on the fragments and perform direct coaptation.

3. In the presence of vicious callus resulting from separation of the superior humeral epiphysis, or of a consolidated fracture in a state of deformity, the only recourse consists in exposing the callus, to separate the fragments to replace them in proper position, if necessary to obtain coaptation, to arrest the end of the diaphyseal fragment. If there is a tendency to displacement they should be united by a bone or periosteal suture.

The Treatment of Fracture of the Radius.

Hennequin summarizes the conclusion of his study of this subject in the *Revue de Chirurgie*, No. 9, 1894, as follows:

1. That it is necessary to reduce the fracture of the lower extremity of the radius.

2. That it is necessary to maintain reduction by means of a suitable apparatus, leaving the fingers entirely free.

3. That the patient must use the hand as soon as possible after union.

4. That massage fulfils but one indication, and must not be employed as the only means of treatment, except in those without displacement. Having no other pretension than the restoration of function after consolidation, its *rôle* becomes more restricted if the fingers are left at entire liberty during the treatment.

Conclusions of Studies of Traumatism by Firearms.

1. A ball which strikes the skull, with or without lesion of the cerebral substance, acts only by the general shock communicated to the nervous elements, and therefore the immediate symptoms are only those of cerebral concussion. The wounds of the cerebral substance by firearms are entirely different from those produced by cutting- or thrusting-weapons; while the last are not accompanied by any bulbar symptoms, the first act directly on the medulla oblongata by the shock communicated to the nervous substance.

2. If the ball strikes the regions which fulfil certain functions localized there—as, for instance, the bulb—the destruction of these parts must enter into account in the genesis of pathological manifestations. The other parts of the brain which have known or unknown functions react also under the injury of their elements. [We can recognize the symptoms if parts are affected, the functions of which we know—as, for instance, the psychomotor centres. The symptoms are still unrecognized for the parts where the functions have not been elucidated.] But the injury to all these struc-

tures is not followed by any immediate phenomena, the effect being obscured in the general picture of the concussion.

3. The concussion caused by firearms presents a much greater intensity than that produced by other forms of trauma. The respiratory centre may be paralyzed at once, as may also the pneumogastric centre, which is exceptional in concussion due to the application of blunt force. It is necessary to distinguish between the intensity of the violence producing the concussion, according as it causes paralysis of the vagus or simple excitation, because the modifications of the cerebral circulation are essentially different in the two cases.

4. The centres of the bulb, which are too much stupefied to resume their functions again, may do so, however, if artificial respiration is resorted to. It is not a general law, but the exception confirms the rule, showing the revival of the centres—vasomotor and pneumogastric—which we know are much less sensitive than the respiratory centres to cerebral traumatism and to the variations of the blood-current. It is only in the most extreme cases that artificial respiration does not revive them.

5. A practical and incontestable deduction results from these observations: the importance of artificial respiration in cases of sudden cerebral concussion that threatens life.

Again:

1. In moderate concussion of the brain accompanied by retardation of the heart a cerebral anæmia is produced by active contraction of the vessel.

2. In intense concussion caused by severe traumatisms, and characterized by acceleration of the pulse, there is, on the contrary, paralysis of the vessels, loss of vascular tone, and consequently arterial hyperæmia.

Experimental Researches on Concussion of the Brain.

From an extended study of this subject by Polis (*Revue de Chirurgie*, 1894, Nos. 7 and 8) we take the following conclusions: That concussion, whether produced by a single trauma or by repeated blows, is accompanied by the same effects upon the nervous system. If certain differences are observed at the moment of the shock, they are easily interpreted and confirm this general rule. The result of the violence, the clinical condition, is identical in the two cases. It is the expression of the same physiological modification of the nervous centres. The analogy is so visible, even in the minutest detail, that there is nothing to be added to the analysis of the bulbar symptoms. A single point worth mentioning is the acceleration of the heart-action in consequence of a violent concussion in the case of the hare. The nervous centres, under the influence of simple anæmia, suffer the same modifications as under the influences of traumatisms.

Painful Peritoneal Adhesions.

Nicaise (*Revue de Chirurgie*, 1894, No. 8) calls attention to the frequency of painful peritoneal adhesions, particularly in the pelvic region. The pains frequently resemble hepatic and nephritic colic. The amount of pain is very variable, being in some cases slight and very violent in others.

Pelvic adhesions are more apt to give pain than are those situated in the abdomen. The diagnosis is frequently difficult, and must be made by exclusion. There are usually no very marked signs. There are apt to be some constipation, indigestion, and perhaps obstruction. In some cases it may be necessary to perform an exploratory operation.

The treatment consists in massage and the wearing of a flannel bandage; but if the pain is severe, an operation to free the adhesions will be necessary for its relief. Some authors state that the same condition is left after an operation, but this is not accepted by Nicaise, who advises the division of the offending band in every case with pronounced symptoms.

Dermoid Cyst of the Anterior Mediastinum.

Dardignac reports (*Revue de Chirurgie*, 1894, No. 9) the following case: A soldier, twenty-two years old, applied to the Hôtel-Dieu. On entering the military service a prominence of the right chest was noted. Auscultation was negative. It was observed that marching induced some difficulty in respiration. On rising in the morning there was a period of severe coughing, terminating in efforts at vomiting. Finally he was obliged to give up.

There was nothing in the family or personal history that seemed to bear upon the present condition. The whole right chest was enlarged. After three weeks of expectant treatment an aspirating needle was introduced to the depth of seven centimetres at the most prominent part of the swelling in the mammary line and 800 grammes of yellowish liquid withdrawn. An examination showed that the fluid was not purulent. Improvement followed at once, fever was absent, there was no spitting of blood—in short, no consecutive phenomena were to be noted. A second aspiration, ten days later, gave issue to 500 grammes of a fluid similar to the first. Again immediate and more marked improvement followed, which persisted.

Three years later he applied for treatment again, with a swelling of the right side of the chest, being most prominent in the mammary region. It was rounded and resisting. The symptoms improved somewhat by rest, but the general condition was much the same. An operation was performed for the relief of the condition. After excising six centimetres of the fourth rib an aspirator was introduced into the fluctuating portion, and a thick, turbid, greenish fluid was withdrawn, not containing pus or blood, but mixed with particles resembling grains of rice colored with saffron. It was impossible to tell whether the sac was intrapleural or extrapleural. Its capacity was estimated at 1800 grammes. Irrigation brought out some skin, hair, and sebaceous matter, proving the tumor to be a sebaceous cyst. To remove the cyst would have required an extensive costal resection, and as the sac-wall was adherent on all sides it was decided to attempt to secure the obliteration of the cavity by exciting an inflammation. For this purpose tincture of iodine was employed and iodoform-gauze introduced. The patient had a slow convalescence, attended with some fever. Four months after the operation a small retrocosto-sternal cavity persisted, with a fistula twelve to fourteen centimetres deep, which remained as long as the patient was under observation, although it decreased somewhat in its dimensions. The patient gained in weight and seemed in perfect health. The author has collected twenty three similar cases from literature.

OPHTHALMOLOGY.

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THE CEREBRAL VISUAL CENTRES.

Does there exist in the cerebral cortex a visual centre, constant in localization and well circumscribed? Where is it situated? What are its anatomic structure and physiologic functions? These are the questions discussed by DR. S. E. HENSCHEN, of Upsala, in the *Revue Gén d'Ophthalmol.*, 1894, No. 8. He points out that in spite of many researches these questions are not yet answered, and brings to bear upon them his own exhaustive and extremely valuable "Contributions to the Pathology of the Brain," of which the first half of Part III. has recently been issued.

Normal anatomy, he thinks, can never solve the problem, Which of the more or less uniform cerebral cells are endowed with the property of perceiving the impressions of light? The experiments of physiologists upon the lower animals have led to results too diverse to inspire confidence. There is no certainty of exactly similar localization and structure in the lower animals and man; while accurate observations, that are often impossible in patients lacking intelligence, are still more out of the question for brutes. Even the method of degeneration, accurate and valuable as it is, does not indicate the function of the parts involved, but only that they are intimately related. Thus, one of Henschen's cases, blind of leprosy for fifty years, showed complete destruction of the eyeballs and chiasm, and complete atrophy of the optic nerves and tracts, atrophy of the external geniculate bodies, pulvinar anterior corpora quadrigemina, the radiations of Gratiolet, and, besides, atrophy extending not only into the occipital lobe, but also into the parietal and temporal lobes. Certainly some of these atrophied fibres, though they have importance in the complex mechanism of vision, do not conduct the impressions of light to the visual centres. Their destruction alone would produce no blindness of a corresponding portion of the visual field. Only the anatomico-clinical method can guide our researches on the localization of the visual centre and its limits.

Applying this method to the questions under discussion, one must consider both the positive cases of hemianopsia and the negative cases as well. Having collected from medical literature all of these recorded with sufficient accuracy to throw light upon the subject, and having carefully analyzed and grouped them, he has arrived at the view that *the cortical visual centre is limited to the*

calcarine fissure. Whether it is only the posterior extremity of the fissure or portions in front of this that participate in the formation of the centre, it is now impossible to say. The occipital visual tract is situated in the inferior part of the optic radiations, and forms a fasciculus some millimetres to a centimetre thick. *Hemianopsia is produced only by a lesion of this fasciculus or of the calcarine cortex.* He has been unable to find a single well-observed case opposed to this view, although there are in medical literature some defective or badly described observations that seem to oppose it.

As to the supposed localization of this centre in the parietal lobe, Henschen points out that while numerous cases of lesions of this lobe have been accompanied with hemianopsia, many more cases of such lesions have existed without any such symptom. He gives diagrams of a number of these, in some of which the lesion was small, but in others it was very extensive. An analysis of these cases shows that the lesion of the parietal lobe causes hemianopsia only when it involves the visual fasciculus in the inferior portion of the optic radiations. The same applies to lesions of the precuneus and of the temporal lobe. A great quantity of anatomico-clinical facts locate the visual centre in the occipital lobe.

The exact location of the centre in this lobe must be learned from cases described with great detail. Evidently the effects of a lesion will vary with the depth to which it extends in the white matter. The distinction must, therefore, be made between lesions involving the white matter and those confined to the cortex. Only the latter can indicate the exact localization of the centre in the lobe. It is noted, however, that in cortical lesions the fibres always suffer, so that the subcortical layer shows degeneration. Lesions strictly subcortical have, therefore, the same significance as cortical lesions.

As to the location of the centre on the lateral surface of the lobe, Henschen figures six cases of such lesions, in some cases bilateral, without hemianopsia or blindness. He knows of no published case in which lesions of the lateral surface not involving the optic radiations have caused blindness, except one where the depth of the lesion was not indicated. On the contrary, lesions of the median surface of the lobe produce hemianopsia even when limited to the cortex. Not all such lesions, however, cause it. He figures three cases, one with extensive and multiple lesions in which sight was preserved. In none of these was the cortex lining the calcarine fissure affected. He then figures sixteen cases of lesion of the median surface in which hemianopsia did occur. In some the lesions were limited, in some extensive, but all involved the walls of the calcarine fissure, or the visual fasciculus, the lower part of the optic radiations.

Bearing on the question of the limits of the visual centre, Henschen has recorded one case in which the lesion was limited to the cortex of the calcarine fissure and the hippocampus with hemianopsia. The lesion had been stationary several months, was a softening from thrombus, and the white substance was affected secondarily only to the depth of 1 or 2 millimetres. The patient was intelligent, and the visual field had been repeatedly taken by different observers. The microscopic examination was minute, and the case uncomplicated by lesions of the central ganglia. It is impossible at present to limit the centre more precisely than seems to be done by this case.

A point of peculiarity in the anatomical organization of this region is presented in the molecular layer of the cortex, which is here very thick.

Regarding the physiological organization of this centre, Henschen believes, in opposition to most other writers on the subject, that the centre for colors is coincident with that for light, although color-impressions may be perceived by particular cells or by a special layer. Cases are still lacking to decide fully this point. Henschen is also convinced that both the direct and the crossed fasciculi are represented in the cortex of the calcarine fissure, the cortical elements belonging to them being probably placed the one alongside the other. If the opposite theory of Munk, founded on experiments on the lower animals, were applicable to man, monocular hemianopsia would be certainly very common. Henschen knows of but two imperfectly observed cases, in one of which there was no autopsy, while in the other it was very incomplete.

Henschen proposes to designate as the cortical or cerebral retina this part of the cortex lining the calcarine fissure, to distinguish it from other portions of the cerebral cortex taking part in the act of vision, which might properly be included under the more general term visual centre. He thinks the question as to whether we can determine which part of this area represents the macula lutea and which the peripheral visual field, is to some extent answered by cases reported by Hun (this JOURNAL, January, 1887), by Wilbrand, and by two of his own. In one of the latter the right occipital lobe had been extensively disorganized, including the optic radiations, while the left presented nutritive disturbances and slight softening which rendered useless the cortex of the posterior two and a half centimetres of the calcarine fissure. Yet this patient could read fine print to the last days of her life, showing unimpaired vision at the macula. In another patient with bilateral lesions of the cuneus and destruction of the cortex of the posterior part of the fissure on the right side the central field was also preserved, showing that it did not depend on the cuneus.

The arrangement of the cerebral or cortical retina appears to be, with the macula anteriorly, the peripheral field in the horizontal meridian posteriorly, the upper lip of the fissure corresponding to the upper part of the retina (lower field), and the lower lip of the fissure to the lower part of the retina (upper field). Probably each half of each macula lutea is represented in both occipital lobes, and each quadrant—upper and lower—receives fibres through both the upper and lower parts of the optic radiations.

CAUSES OF FAILURE OF IRIDECTOMY TO RELIEVE GLAUCOMA.

E. NEACHER COLLINS, in his extensive experience as Curator to the Royal London Ophthalmic Hospital, found that by far the commonest cause (*Lancet*, No. 3721) of failure to relieve glaucoma by iridectomy was the non-removal of the iris up to its extreme periphery, so that a portion of it is left blocking up the filtration-area. In glaucoma of long standing the root of the iris becomes absolutely adherent to the cornea, and when drawn upon, instead of tearing at its junction with the ciliary body, tears at the point where it ceases to be adherent, so that the filtration-area never becomes opened up. On this account he urges the necessity of performing iridectomy early in chronic glaucoma. Another cause is adhesion of the lens-capsule to the wound, from

slow re-forming of the anterior chamber. This causes the pressing of the stump of the iris, or the ciliary processes, against the ligamentum pectinatum, in the situation of the coloboma for cases of this kind. Scleral puncture has been suggested as a preliminary to iridectomy, and has answered well; but a possible danger of this procedure is suppuration of the vitreous, of which Collins has seen one case. Prolapse or adhesion of the ciliary processes to the sclero-corneal cicatrix not infrequently occurs when the incision has been very peripheral. This blocks the filtration-area even if the iris has been removed up to its extreme periphery. In acute glaucoma he does not think it necessary to make the incision very peripheral, provided an iridectome-dialysis be done. The iris, unless already firmly adherent to the cornea, tears away naturally at its root when drawn upon, wherever the incision is, and a peripheral incision certainly increases the risks of the operation.

Changes in the Ciliary Body from Tapping the Anterior Chamber.

Richard Greef (Berlin), by experiments on rabbits, has found (*Archives of Ophthalmology*, vol. xxiv., No. 1) that when the anterior chamber is opened the aqueous humor which escapes does not coagulate on standing, and contains neither fibrin nor albumin, thus differing from blood-serum. If, however, the anterior chamber be soon opened a second time, the fluid that escapes coagulates promptly, is rich in albumin, and contains much fibrin; and some hours later there is usually a deposition of fibrin in the anterior chamber in the form of a delicate membrane which disappears in a short time.

On enucleating and examining microscopically the eyes thus treated Greef found remarkable changes confined to the ciliary processes. Immediately after the puncture large vesicles appear formed by the elevation of the epithelium, and containing coagulated masses, clusters of red corpuscles and occasional white ones. They are more numerous on the anterior portion of the ciliary processes. Ten minutes after the puncture they are to be found in all stages of development—small flat elevations of the epithelium, incipient vesicles, numerous large vesicles, and vesicles collapsed. Twelve hours after puncture small developing vesicles may be found; after three or four days some vesicles are still seen; but after six days no trace of them remains.

Aneurismal Proptosis or Vascular Protrusion.

In reporting a case of bilateral exophthalmos with hemorrhagic neuro-retinitis, probably from traumatic intracranial arteriovenous aneurism, G. E. de Schweinitz (*International Medical Magazine*, vol. iv., No. 1) brings together cases, hitherto uncollected, to the number of 37, which, added to those previously collected by Sattler and Nieden, give a total of 181 cases. Of these cases, traumatism is responsible for about 60 per cent. Exophthalmos is usually confined to the side of injury, but was bilateral in 12 cases out of 96.

In the treatment of this condition ligature of the common carotid yields the best results. This operation was performed in 102 cases with 11 deaths,

3 of which it is claimed were not attributable to the operation. The earlier operations were done, however, without the advantages of aseptic surgery. Of the cases collected by de Schweinitz, 21 were operated on, all since 1886, without a single death.

De Schweinitz's case occurred in a man aged forty-one years, injured by an explosion, causing unconsciousness, but no demonstrable fracture of the skull. Three weeks later there was venous hyperæmia of both the external and retinal vessels, which continued. Ten months later there developed a roaring in the head like the puffing of an engine, with an objective bruit, optic neuritis, and retinal hemorrhages.

Optic Neuritis of Gonorrhœal Origin.

Panas (Paris) attributes to this cause (*La Presse Médicale*, February 23, 1895) a case of double optic neuritis occurring in a waiter, aged twenty-six years, who had not suffered from syphilis, rheumatism, or any eruptive fever, but who for several years had suffered with chronic blennorrhagia, with repeated relapses. He suffered violent pain in the lumbar and sacral regions, extending to the pelvis and lower limbs. Micturition was painful, the urine thick and ammoniacal. No interference with motility or general sensation, and no trophic disorders were observed. The cause of pain was localized disease, believed to be gonorrhœal, at the lower extremity of the spinal cord.

With the right eye he counted fingers with difficulty at a metre and a half. The field of vision was concentrically contracted, with a true scotoma in the lower nasal portion. Color-sense was good, pupil and ocular tension normal. The optic papilla was protruding, cloudy, its border indistinct, capillary vessels numerous, veins full and tortuous, arteries small. There was fine dust-like opacity of the vitreous, but not enough to hinder the view of the fundus. The left eye showed no functional impairment, but similar fundus-changes, only less in degree.

A similar case Panas had previously observed in a man, aged twenty-nine years, who had suffered from chronic blennorrhagia, multiple articular and sciatic pains, and a meningitis of the base. He thinks other causes of neuro-retinitis can be excluded in these cases, and, on account of the well-known tendency of gonorrhœa to produce visceral and nerve-lesions, feels justified in regarding it as the cause of the optic neuritis.

Treatment of Corneal Ulcer.

Dr. Mules (*Trans. Eighth International Ophthalmological Congress*) claims great efficiency for the following method, even in the presence of extensive corneal infection and hypopyon. The cornea is first anæsthetized with an 8 per cent. cocaine solution, which also renders it hygroscopic, an iodoform-wafer softened by soaking a minute or two in cold boric acid solution is laid over the cornea, the lid drawn from the globe, and the eye gently closed. An iodoform-pad is fixed with strips of plaster, and a flannel roller-bandage firmly applied over the closed lids. The iodoform-wafer is prepared by dissolving gelatin in a saturated solution of boric acid, and stirring in iodoform reduced by trituration to an impalpable powder, then spreading over glass-plates to the required thickness, and allowing to dry.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

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Osseous Synechia with Cystic Myxoma of the Right Nasal Fossa.

This unique case is reported (*Revue de Laryngol. d'Otol. et de Rhinol.*, 1895, No. 5) by Dr. Bonain, of Brest: A large tumor obstructed the right nasal fossa of a vigorous young man, nineteen years of age, who had suffered from the occlusion since infancy. The septum was very much pushed to the left side, forming, in part, a cavity for the reception of one side of the tumor. The tumor was removed with the electric snare, and immediately gave exit to a liqueurglassful of yellowish-brown mucus very thick and viscid. It had been attached to the middle turbinate bone and to the upper portion of the septum. After its removal a vertical osseous plate was found obstructing the fossa transversely, and giving passage to air under its inner and inferior border. This was removed piecemeal with a gouge, and found to be more than one half millimetre in thickness, and to be covered on both faces with a pale and very fine mucous membrane. The patient recovered promptly, with entire cure of the severe headaches, conjunctivitis, and epiphora, which had been the result of the presence of the morbid structures.

Empyema of the Frontal Sinus.

While Zuckerkandl states that he has never seen an instance of isolated inflammation of the lining membrane of the frontal sinus, or any instance of dilatation of the sinus due to empyema, Dr. Leopold Müller, who makes the citation above, states (*Wiener klin. Woch.*, 1895, No. 11) that in his cases of inflammation of the mucous membrane of the sinus which proceeded to empyema, subsequently to dilatation, and in some instances to perforation of the walls of the sinuses, all of them, ten in number, presented themselves clinically as isolated inflammations of this pneumatic cavity. They are principally encountered in eye-clinics.

Dr. Müller narrates in detail a case of acute suppuration due to influenza, in which extensive metastases took place in two directions, necessitating serious operative procedures to evacuate the pus, and which ended fatally about the fiftieth day of the disease.

Excision of the Larynx.

Dr. Charles A. Powers, of Denver, Col., and Dr. George R. White, of New York, report (*Medical Record*, 1895, No. 1272) 6 cases of excision of the larynx; 1 case performed by Dr. Powers, and 5 cases performed by Dr. W. T. Bull, of New York; and they present an analysis of 300 additional

cases gathered from literature, 309 in all. This makes it one of the most valuable contributions to statistics on the subject that has appeared for some time.

Of the 6 new cases, Case 1 was partial laryngectomy for cancer, with death from recurrence at the end of five months; Case 2, total laryngectomy for cancer, with death at the end of one year; Case 3, partial laryngectomy for cancer, with death in fourteen months; Case 4, partial laryngectomy for sarcoma, remaining well at the end of four years; Case 5, total laryngectomy for cancer, with death occurring at the end of two and one-half months; Case 6, partial laryngectomy for cancer, with death from the operation.

Of 208 cases of total extirpation, 185 were for carcinoma, 11 sarcoma, 4 tuberculosis, and 8 varied. Of these, 73 died as the result of the operation, 51 more died within six months, and 24 died between six months and one year, 10 between one and two years, 8 between two and three years, 15 survived three years or more, while 27 were not traced or were reported too early.

There were 101 cases of partial excision of the larynx, 82 for carcinoma, 4 sarcoma, 3 tuberculosis, 12 for other causes. Of these, 28 died as the result of the operation, 22 more died within six months, 8 between six months and a year, 6 between one and two years, 3 between two and three years, while 8 survived three years or longer, and 27 remain untraced or reported too early.

The results of the tables are summed up as follows:

Total laryngectomy for cancer: of 180 cases, in 72, or 40 per cent., death occurred as the direct result of the operation itself. Of the remaining 108 cases, 51, or nearly one-half, had recurrence during the first year; and 11, or a little more than 10 per cent., of the survivors were free from relapse three or more years after the operation.

Partial laryngectomy for cancer: 77 cases, of which 26, or more than 33 per cent., died during the first two months. Of the remaining 51, 7 cases, or 13 per cent., are reported free from recurrence three or more years after the operation.

In discussing the results of their study, the authors call attention to the circumstance that in both the total and the partial operation but two cases relapsed after the three-year limit had been passed—one in three years and four months, and the other at the end of nine years.

They likewise intimate that there may be unrecorded fatal cases, while it is unlikely that there are any unrecorded cured cases.

Cases reported as free before the lapse of three years are deemed of very little value, except that they diminish by so much the operative death-rate.

They deem it obviously improper to include in the same category a case in which the cancer had progressed to the tissues outside the larynx, and one in which there was a small intralaryngeal epithelioma. In the one case there is no chance for cure, in the other a wide excision may offer a fair prospect from relapse.

Tuberculosis of the Larynx.

Dr. Walter F. Chappel reports (*New York Medical Journal*, 1895, No. 852) a number of cases of tuberculous laryngitis very much benefited by the submucous injection of minute quantities of creosote in addition to its topical

and constitutional use. The method is fully described, and an illustration is given of an ingenious automatic syringe by means of which the amount of solution injected can be limited to one drop when necessary.

Foreign Bodies in the Maxillary Sinus.

I. In an article upon this subject (*Archives Internat. de Laryngol. de Rhinol. et d' Otol.*, 1895, No. 1) Dr. M. Gouly reports a case in which, while washing out the sinus after an operation, the patient made an abrupt movement by which the end of the canula broke off and remained in the sinus. Eight days afterward the foreign body was expelled from the nasal fossa while the canal was being washed out. Rhinoscopic examination showed considerable hypertrophy of the mucous membrane of the middle meatus. The end of the canula, which was conical in form, measured fifteen millimetres in length and six millimetres in breadth at its base, almost the extreme limits of the size of the largest semilunar hiatus.

Dr. Gouly refers to a case of Eulenstein's, in which the point of a trocar had remained several months in the sinus, and was evacuated by the nasal fossa during a washing; a case of Koenig's, in which a knife-blade four centimetres in length escaped subsequently from the nose, after having sojourned forty-eight years (?) in the sinus; a case of A. Combe's, in which a drainage-tube was eliminated spontaneously from the nasal fossa after a sojourn of four years and one month; and a case of Moure's, in which twelve fragments of cotton had been pushed into the sinus by a dentist after the extraction of the first molar. Three of these fragments were extracted subsequently by forceps, and the last one was expelled from the nose during the use of the handkerchief.

As a result of these and other cases reported, the writer recommends abstinence from all active intervention other than repeated ablutions of the sinus, unless some deleterious consequences point to more energetic treatment.

II. In an article on the same subject (*Revue de Laryngol. d' Otol. et de Rhinol.*, 1895, No. 5) Dr. J. Baratoux, of Paris, presents a summary of the literature on this theme, and follows with a record of two interesting cases of his own, both the result of bad dentistry. The first one was the wife of the dentist himself, who, during a period of eighteen months or more, had inserted pledgets of cotton in a fistulous tract at the level of the second molar in order to treat, as he supposed, the shell of tooth remaining in the alveolus. Dr. Baratoux had the alveolus opened, when a mass of cotton the volume of a small orange was removed from the sinus.

It appears that the dentist had taken it for granted that his wife had either swallowed the tampons or lost them, and was ignorant of the fact that the fistula communicated with the maxillary sinus.

The second case was a still more unfortunate one. A lady's antrum had been opened by the sacrifice of a healthy first molar, although the second molar was gone, and a laminaria-tent had been inserted into the orifice to keep it open. The next day a silver tube was introduced into this opening, but no trace could be found of the laminaria-tent, which the patient was accused of having lost, although she denied it positively.

During a period of six years this poor woman was subjected to various

operations through the cheek for the relief of a suppuration of the sinus which was not supposed to be due to the presence of a foreign body. She finally was transferred to the care of Dr. Baratoux, who extracted, through the fistula of the cheek, half of the laminaria-tent, three and one-half centimetres in length and four millimetres in diameter; and three weeks later he extracted the other half, after which the patient got well.

Hemorrhagic Pharyngitis.

Under this head Dr. Natier narrates (*Rev. Internat. de Rhinologie*, etc., 1894, No. 15) a case of effusions of blood from the pharynx of a shopman, twenty-nine years of age, one or twice to the amount of a tumblerful—once, indeed, under the eye of the narrator, to the amount of a liqueurglassful. No lesion existed, the hemorrhage being purely diapedic. It was finally controlled by an application of silver nitrate solution, 1:8, followed by applications of citron-juice made by the patient on occasion of recurrence for a few days.

Trophic Ulcerations of Nose and Ears in a Case of Bulbar Tabes.

Dr. C. Girandeau publishes (*La Presse Médicale*, October 27, 1894) this interesting and unique case: A postman, thirty-eight years of age, had been for six years a subject of tabes, which had begun with strabismus and other ocular disorders, followed two years later by vertigo, genito-urinnary disorders, and intense gastric crises often excitable by odors, such as tobacco-smoke. During the last eight months indolent ulcerations and erosions had occurred about the orifices of the nose and ears and upon the surfaces of frontal cicatrices of apparently syphilitic origin. Under the internal use of silver nitrate and topical applications of boric acid much amelioration had been produced, and had become much more pronounced under subcutaneous injections of testicular liquid on the method of Brown-Séquard, the ulceration having become completely controlled in some places, while it remained stationary in others.

Pharyngeal Spasm in Tabes.

Mr. Courmont has observed (*Revue de Méd.*, September, 1894, *idem.*) a case of veritable tonic spasm of the pharynx absolutely analogous to laryngeal crises. The symptoms were so intense that alimentation became impossible and death appeared imminent. There was no laryngeal, œsophageal, or gastric phenomena. The manifestations ceased abruptly under the influence of suspension. Hence it was inferred that the spasms must have been due to peripheric lesion.

Cyst of the Larynx Cured by Injections of Carbolic Acid.

In the *New York Medical Journal*, 1894, No. 882, Prof. Ingals, of Chicago, reports a large cyst of the ventricular band, and probably of some two years' duration, in a man forty-three years of age. Injections of lactic acid failing to reduce the growth permanently, solutions of carbolic acid, 8 to 10 per cent., in glycerin and water, were injected once a week or so for five or

six weeks, with such approximity to disappearance of the cyst that the injections were suspended to note whether there would be any refilling. Three months later the cyst had become obliterated, and the cure appears to have been permanent. A very good woodcut illustrates the article, but it requires the use of a mirror to exhibit a proper image of the larynx to the reader.

Acute Infectious Follicular Glossitis.

Every now and then an acute inflammation of the lymphoid nodules of the base of the tongue is encountered, described by Massei, in 1884, as a new form of glossitis. Much more frequently a chronic inflammation is encountered, usually in association with lacunar tonsillitis, the white exudations at the mouths of the ducts in the base of the tongue being very marked.

Dr. Vinc. Garzia, of Naples, has recently studied the acute variety of the disease bacteriologically (*Rev. Internat. de Rhinologie*, etc., 1894, No. 17), and has found that the closed follicles reveal only the diplococci of Fraenkel, while follicles which have undergone ulceration reveal the yellow staphylococci also.

Epistaxis.

In a paper (*Rev. Internat. de Rhinologie*, etc., 1894, No. 15) based upon 250 cases of epistaxis, Dr. Egmont Baumgarten, of Budapest, presents some points of interest. While 150 cases occurred in males and but 100 in females, the proportion between the ages of thirty and fifty years was far the greater in females, a circumstance attributed to supplementation of the menstrual flux. No cases were observed in patients less than one year of age. The seat of lesion was over the cartilaginous septum in 219 cases, the membranous septum in 2, the osseous septum in 4, the floor of the nose in 5, the inferior turbinate in 8, the middle turbinate in 5, and at various other localities in the remaining 7 cases. Fifteen of these cases occurred during an epidemic of influenza, 8 in association with anæmia, and 1 with purpura.

Baumgarten prefers chromic acid as a cauterant to the electric cautery, because of the impossibility at times of removing even the incandescent instrument without detaching the eschar, and thus renewing the hemorrhage should such detachment take place; the second cauterization is made with the acid. Hemorrhage is restrained with tampons of iodoform-gauze. While most cases yield rapidly, some cases require protracted treatment, especially in the subjects of arterio-sclerosis and leucæmia, one case of the latter being mentioned which occupied some two years in controlling the ever-spreading zones of hemorrhage.

[Some cases of epistaxis are due to hemorrhage from diseased lymphoid glands at the vault of the pharynx escaping through the nose. This fact seems to be ignored or unknown by most writers on epistaxis.—J. S.-C.]

Intranasal Operations in Tuberculous Subjects.

Dr. Karl Hess, of the Sanatorium for Consumptives in Falkenstein, contributes an article on the employment of electrolysis in thickenings and deflections of the septum narium (*Münchener med. Wochenschr.*, 1894, No. 39).

The chief interest of this paper lies in the fact that it is based upon the procedures practised upon the inmates of the institution only—that is, upon consumptives. Another interesting point is in the fact that as these patients were inmates of the institution for months consecutively, the cases could be well watched and cared for. Bloody operations were found to produce slight rises in temperature. Frequent burnings in the nose often produced very uncomfortable results, such as loss of appetite and insomnia. For these reasons Dr. Hess determined to resort to electrolysis. The reactions were much more insignificant than after similar procedures in private practice, a result attributed to the pure air and the absence of deleterious chemic and bacteric admixtures in the atmosphere.

Rhinopharyngeal Syphilitic Lesions.

In the *Münchener med. Wochenschr.*, 1894, No. 39, Dr. M. Kahn, of Würzburg, calls attention to two cases of otalgic symptoms, due to specific ulceration of the rhinopharynx extending to the pharyngeal outlets of the Eustachian tube, and which he describes in detail. These are examples of isolated rhinopharyngeal syphilis, differing from all other recorded cases (several citations from which are given) in the presence of otalgia, which is not noted in the reports of other observers.

OBSTETRICS.

UNDER THE CHARGE OF

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Bacteriological Study of the Genital Canal during Pregnancy.

The much-discussed question as to the presence or absence of pathogenic micro-organisms in the genital canal during pregnancy has received recent study by Walthard in the Obstetrical Clinic of Bern (*Archiv für Gynäkologie*, Band xlviii. Heft 2). He found that the mucus ordinarily found in the vagina does not necessarily hinder the growth of pathogenic germs, but that the secretion of the cervical canal is not a favorable medium for their growth and development, and undoubtedly prevents the growth of bacteria within the uterus. In fact, the cervical canal is the border between those portions of the genital tract which are free from bacteria and those which contain

them. The mucus found in the vagina and leucocytes act as antiseptics rather than as aseptic substances. It is possible by digital examination to transfer to the cervical canal bacteria from the vagina. The rupture of the membranes and escape of amniotic liquid do not absolutely remove the bacteria from the vagina. Micro-organisms which, under normal circumstances, may be isolated from the cavity of the uterus during the puerperal period, found their way into that portion of the body during labor. An examination of the mucus found in the vagina revealed the presence of streptococci, with, however, a much less degree of virulence than the same germs derived from tissues in phlegmonous inflammation, or from the lochia in puerperal septicæmia. At the beginning of labor these vaginal streptococci are without virulence, and when brought in contact with the amniotic liquid do not become virulent. Aseptic lochia increase their activity but little. Any cause, however, which diminishes the resisting-power of the tissues may permit the entrance of these germs into the connective tissue and set up a process of fatal septicæmia.

The virulence of streptococci found in the vagina is that of the same germs found upon healthy mucous membrane in other portions of the body, as in the intestinal tract. They are, in fact, not virulent, but are saprophytic germs upon healthy tissue. They can, however, take upon themselves a parasitic character when the resistance of the tissues is diminished. Under certain circumstances they may become the infective germs of puerperal fever. In addition to vaginal streptococci, puerperal sepsis may be caused by staphylococci, gonococci, and the bacterium coli commune; the latter germ may be found in vaginal mucus and in amniotic liquid. They may turn the lochial discharge brownish and offensive, although this condition of the lochia does not point to the presence of streptococci.

From these researches the following practical conclusions may be drawn regarding the prophylaxis of puerperal sepsis: whenever it is necessary in an examination for operative procedure to introduce the finger or an instrument within the cervix, the vagina should first be thoroughly antisepticised; in all cases of normal labor this procedure should be carried out; in all patients the resisting-power of the tissues is lessened by any cause, such as nephritis, valvular heart-disease without compensation, syphilis, diabetes, intercurrent infections, and anæmia. In view of the antiseptic powers of leucocytes normally found in the vagina, any antiseptic employed for this purpose must be such as not to destroy the power of these cells. Such solutions must not be too strongly concentrated, for such destroy the integrity of the mucous membrane, thus destroying the leucocytes and furnishing a good culture-medium for poisonous germs.

Traumatic Rupture of the Uterus during Pregnancy.

An interesting case of this accident is reported from the clinic in Würzburg, by Reusing (*Centralblatt für Gynäkologie*, 1895, No. 2). The patient, a woman, aged twenty-three years, in the eighth month of her first pregnancy, fell from the roof of a shed or stable, between twelve and fifteen feet high, upon hard earth beneath; she struck upon both feet, and sank down upon her knees. She made about twenty steps afterward, and then had to be carried into the

house. As no external symptoms of injury developed to account for her condition, she was examined under an anæsthetic, the abdomen being tense and very sensitive. There was no hemorrhage, but by palpation the fœtus could be outlined lying partially in the abdomen. Heart-sounds had ceased. The patient was taken to the clinic and cœliotomy performed. The child was lying in the abdominal cavity, in the first stage of maceration, the operation being done three days after the accident. A long rent in the anterior surface of the fundus was found in which the placenta presented. The placenta and membranes were removed, the edges of the rent thoroughly cleaned and freshened, and the tear closed with nine deep silk sutures. The peritoneum was brought together over the tear by continuous catgut suture. The abdomen was sponged as carefully as possible, and closed without drainage. The patient made a good recovery, the lochial discharge remaining normal and escaping freely. It is surprising in this case that the uterus ruptured through so thick a portion, the muscle of the uterus measuring, at the site of the tear, from one and one-half to two cms. in thickness.

Reusing quotes three additional cases, in one of which a young woman, eight months pregnant, fell backward from the top of a hay-wagon, striking upon her back and shoulder, and rupturing the uterus completely. In another case, a pregnant woman, in endeavoring to escape from a horse-car, fell upon her left side, and was slightly injured by the front of the car. In the third case, a young woman, pregnant for the first time, jumped from the third story of a building upon a stone pavement with suicidal intent. She fell upon the right side of the pelvis, upon the elbow and knee. Complete rupture of the uterus occurred, the child and placenta being found in the abdominal cavity.

GYNECOLOGY.

UNDER THE CHARGE OF

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Conditions Simulating Pelvic Disease.

Rabagliati calls attention to the fact that myalgia of the abdominal and glutei muscles may be mistaken for pain referable to disease of the pelvic organs. Patients with the former condition complain of aching, rather than sharp, smarting pains, while the sensitiveness felt on palpation is distinctly different from that elicited by pressure over diseased adnexa. Minor degrees of tubal and ovarian trouble may coexist with the myalgia, but give rise to no symptoms when the latter is relieved. In favor of the rheumatic origin of the muscular pains are the facts that they are frequently noted in women who have had acute or chronic rheumatism, that the latter affection often develops subsequently, the joint being affected in both, as well as the occurrence of cardiac complications. The writer gives to this

form of myalgia in women the name "perimysitis rheumatica." Errors in diet, especially the inordinate use of bread and tea, are stated to be the main causes of the affection, which is best treated by liberal diet and anti-rheumatic remedies. Bathing is an important factor in the treatment, while auto-movements of the affected muscles, while simultaneous pressure is exerted upon them, is preferable to massage.

Nervous Impulses Controlling Menstruation and Uterine Hemorrhage.

Collins (*British Medical Journal*, January 12, 1895) concludes a paper on this subject with the following practical deductions: There is a nervous centre in the lumbar cord controlling the uterus. Uterine hemorrhage is due either to local conditions within the organ itself, or to extra-uterine influences directly affecting the nervous centre. Menstruation results from the stimulation of this centre by "the decaying decidual cells." Removal of the adnexa causes arrest of menstruation by cutting off the uterine impulses to the centre. The practical deduction is first to explore the uterine cavity in all cases of hemorrhage, to decide whether the cause is local or not.

Sero-fibrous Approximation of Abdominal Wounds.

Greig Smith (*British Medical Journal*, January 5, 1895) argues in favor of sero-fibrous as opposed to the ordinary approximation of peritoneum to peritoneum. He claims that union takes place just as rapidly, and is firmer at the end of two days. Moreover, there is less risk of intestinal adhesions than is the case when peritoneal flaps are united with the raw edges turned inward, which is responsible for nearly two per cent. of the deaths after abdominal section.

Primary Genital Tuberculosis.

Sippel (*Deutsche med. Wochenschrift*, 1894, No. 52) reaches the following conclusions through his studies on this subject: Primary genital tuberculosis results from direct external infection through the vagina, the tubes being more susceptible than the uterus so long as menstruation persists. The diagnosis is made not only by direct palpation of the diseased tubes, but by the detection of tubercle bacilli in bits of the endometrium removed by curettage, and is confirmed by the subsequent development of tuberculous peritonitis. Since it is important to preserve the function of menstruation, the whole or a portion of the ovaries should be spared when the diseased tubes are extirpated. Direct infection of the peritoneum may take place from the latter.

Fibroma of the Ovary.

Graefe (*Centralblatt für Gynäkologie*, No. 1, 1895) reports two cases of true fibroma of the ovary, and affirms that he has been able to collect only thirty-six cases in the literature of the last twelve years, which he explains by the active *rôle* played by the epithelium of the ovary as compared with

the stroma. One of his patients was fifty-four years of age, the other seventy-two, which was unusual, as these neoplasms are usually found in young subjects. He notes the frequent occurrence of ascites, the cause of which has never been satisfactorily explained. It is possibly due to the irritation of the peritoneum by the hard, movable tumor, since a similar condition has been observed accompanying hard subperitoneal uterine fibroids. The relatively late appearance of the ascites may be explained by the fact that ovarian fibromata form slowly and do not rise out of the pelvis until they have existed for a long time. In both cases the tumor gave rise to severe local and general symptoms due to pressure.

Curettage of the Uterine Cavity.

Winckel (*Münchener med. Wochenschrift*, 1894, No. 13), after reviewing all the various methods of treating endometritis, expresses his preference for the one which he has practised for twenty-five years, which consists in thorough curettage with a sharp spoon, after previous thorough dilatation, followed by swabbing out of the uterine cavity with dry cotton, and subsequent application of the liquor ferri sesquichlor. He never irrigates or uses the gauze tampon. The patient is kept in bed from three to five days, receiving no douches unless vaginitis develops. The operation is not repeated unless there is a recurrence of profuse hemorrhage. Cases of chronic purulent endometritis are usually treated for several months before curettage is again performed.

Experimental Study of the Treatment of the Stump after Hystero-myomectomy.

Walthard (*Ibid.*), from experiments on rabbits, arrives at the conclusion that when the stump is transfixed, ligated, and dropped back into the cavity, the fact that its circulation is cut off by previous ligation of both uterine and ovarian arteries does not increase the danger of sepsis, provided that it has not been infected during the operation. This corresponds with the practical results obtained by Zweifel, Kocher, and Leopold, who adopted this method of treating the stump.

Extirpation of the Vagina.

Olshausen (*Centralblatt für Gynäkologie*, 1895, No. 1) reports three cases of excision of the vagina for carcinoma of the posterior wall, his method being as follows: The perineal body is divided transversely, and the vagina is separated from the rectum by blunt dissection as high as Douglas's pouch. If it is necessary to remove the uterus, the cul-de-sac is opened, the organ is retroverted and the broad ligaments tied off. The uterus with the affected portion of the vagina is then removed with scissors. When the uterus is to be left the peritoneal cavity is not opened, but the affected portion of the vagina is separated from its attachments laterally, as well as posteriorly, and excised, the edge of the vaginal wound being attached in such a way as to establish a close connection between the lumen of that canal and the cavity in front of the rectum. If the vagina is narrow, more room is gained by splitting the posterior wall from the frænum as high as the diseased area.

The prognosis is unfavorable, as recurrence is usually rapid. Out of sixteen cases operated upon in Olshausen's clinic the disease reappeared in fifteen, only one patient being well at the end of two years. This tendency is probably due to the intimate relation between the vaginal wall and the pelvic connective tissue, as well as to the difficulty of preventing cancereous infection of the extensive raw surfaces left after excision of the neoplasm.

Malignant Adenoma.

Ruge (*Ibid.*) affirms that this variety of neoplasm is distinguished both by the form of the epithelial cells and by their arrangement. As contrasted with the epithelial hyperplasia and new formation of glands seen in ordinary glandular endometritis the malignant growth shows either an overgrowth of cells into the dilated lumen, giving rise to a confused intermingling of cell-columns or a new formation of glands by outgrowths of the epithelial elements, thus presenting the ordinary picture of adenoma.

Hypertrophy of the Spleen Cured by Explorative Cœliotomy.

Marchand (*Gaz. des Hôpitaux; Centralblatt für Gyn.*, 1894, No. 21) reports the case of a woman, aged thirty-eight years, who had suffered for eighteen months with marked ascites and œdema of the lower extremities associated with cachexia. She had been tapped several times, each time three gallons of fluid being removed, after which an enlarged spleen could be palpated, extending below the umbilicus. The pulse and temperature were continuously elevated. An explorative incision was made, extensive omental and intestinal adhesions being separated, and the peritoneal cavity was flushed with a solution of boric acid and closed without drainage. The patient recovered quickly, the ascites did not return, the œdema disappeared, and the splenic tumor gradually diminished in size. The writer infers that this result was due to the separation of adhesions and thorough irrigation, which removed the irritation of the peritoneum; how far the hypertrophy of the spleen contributed to the ascites was not clear.

[While the writer is doubtless correct in his conclusions regarding the beneficial effect of the operation, he is in error in calling it an explorative one in the strict sense. We have always held that an explorative cœliotomy is one in which the abdominal cavity is simply opened without disturbing the existing condition, by separating adhesions or irrigation. The curative effects of many so-called explorations are really due to these additional manipulations.—H. C. C.]

Tuberculosis of the Portio Vaginalis.

Williams (*Medical Press*, September 5, 1894) reports two cases of this disease, in one of which the autopsy showed pulmonary tuberculosis with caseous mesenteric glands. The pelvic organs were not affected, with the exception of the lower third of the cervix and the upper part of the anterior vaginal wall, where there was a large ulcerated surface with slightly elevated margin, the base of which was studded with grayish granulations, in which were found typical giant cells and tubercle bacilli. A careful microscopical

examination of the uterine body, adnexa, and bladder showed that these were not affected.

In the second case, a multipara, aged thirty-six years, of delicate health but with no tuberculous history, had had a profuse leucorrhœa for several months, with painful and scanty menstruation, but without other local symptoms. There were evidences of incipient pulmonary trouble. The cervix uteri was lacerated and indurated, and on inspection presented an eroded appearance, being the seat of a grayish ulceration, with hard, well-defined edges, which bled freely on swabbing it. Microscopical examination of a portion of the ulcerated tissue showed the characteristic appearances of tuberculosis, bacilli being found in this as well as in the vaginal discharge. The patient improved greatly under general and local treatment, the latter consisting in curettage and the application of pure carbolic acid.

Reviewing the literature of the subject, the writer infers that tubercle of the cervix, whether primary or secondary, tends, in obedience to some unascertained law, to limit itself to that structure, thereby constituting in the first instance the only tubercular lesion in the whole genital tract. It is doubtless due to direct infection by the fingers, by instruments, or by coitus, rather than to the contact of infectious discharges originating higher up in the genital canal, there being a previous lesion of the cervix as well as an "inherited predisposition to genital tuberculosis." Patients between the ages of twenty and forty seem to be most susceptible to this local manifestation of the disease.

It is highly important to distinguish a tuberculous from a cancerous ulceration of the cervix, since hemorrhage and a foul discharge may be present in both. The detection of tubercle bacilli in the vaginal discharge is the only positive evidence of the true condition.

As regards treatment, iodine and iodoform have been used successfully to cause healing of the tuberculous ulcers. Curettage, followed by the use of the thermo-cautery, and complete excision and amputation of the cervix have been employed with more or less success, though the disease tends to recur. [The writer makes no reference to total extirpation of the uterus, which would commend itself to modern surgeons as the most radical way of dealing with a localized manifestation of a disease which tends to disseminate itself so rapidly.—H. C. C.]

Comparative Microscopical Studies of the Ovary.

Foerster (*Ibid.*) concludes a paper on this subject with the following deductions: In accordance with the views of His the ovary is to be looked upon as an erectile organ, with an excess of fibrous over smooth muscular tissue in both the cortex and the medullary portion. In the former the muscular fibres interlace in an almost vertical sagittal direction. A plexiform arrangement of the same fibres is seen in the ovary of the cat, ewe, and the guinea-pig. The arteries of the medulla in the human ovary are very tortuous, their muscular coat being prone to undergo hyaline degeneration, while obliterating endarteritis is common; in the cow, ewe, and sow coils of arteries, veins, and capillaries are always found, the walls of which have undergone myxomatous degeneration, while within these vascular tufts there is an effusion of lymph which (in the opinion of the writer) is probably occasioned

by the rupture of lymphatics due to the method of slaughtering. The blood-vessels are often obliterated in consequence of the myxomatous change.

Kraurosis Vulvæ.

Reed (*New York Medical Journal*, September 29, 1894) reports six cases of progressive cutaneous atrophy of the vulva, four of which were treated surgically. His conclusions are as follows: Kraurosis vulvæ is a distinct disease, of rare occurrence, and of an inflammatory nature. It differs from other inflammations of the skin in that the stage of congestion and infiltration is followed by progressive atrophy. It is confined to the vulva, its etiology being very obscure, and is probably of trophic origin; syphilis is not a causal factor. Excision of the affected area is followed by satisfactory results.

Pyæmia due to Pyosalpinx.

Dürck (*Münchener med. Wochenschrift*, 1894, No. 37) gives a detailed description of the results of an autopsy performed upon a girl, nineteen years of age, who died of pyæmia. She entered the hospital complaining of pain in the right shoulder, her history being otherwise negative. The diagnosis of rheumatism was at first made, but as the temperature remained high, and there was considerable general disturbance, the presence of pus in the joint was suspected, though no fluctuation could be obtained. As the latter opinion was confirmed by puncture, an incision was made, and a quantity of thick pus was evacuated. In spite of the operation the patient grew rapidly worse, and died four days later. At the autopsy the following lesions were found: Purulent periostitis of the right scapula; ulcerative endocarditis; purulent pericarditis and pleuritis; parenchymatous nephritis with purulent emboli; cloudy swelling of the liver. Examination of the pelvic organs showed that the left tube was greatly enlarged and adherent in Douglas's pouch, and contained a quantity of thin greenish-yellow fluid, which was filled with *staphylococci pyogenes aurei*. No local or general peritonitis. Culture-experiments and injections in rabbits fully confirmed the results of the microscopical examinations. Pus from the various embolic abscesses contained similar micro-organisms. The writer infers that the case must be either regarded as one of pyæmia of unknown (*cryptogenetischer*) origin, or else it must be assumed that the pyosalpinx was the original seat of infection, the bacteria entering the general circulation, perhaps in consequence of some slight local injury. That the general invasion was a sudden one was shown by the acute symptoms. While cases of localized and general peritonitis due to the rupture of a pyosalpinx, or to the direct migration of septic bacteria through the wall of the tube to the peritoneum, are sufficiently common, pyæmia originating as in the case cited has not been described in works on gynecology. The gonorrhœal origin of the pyosalpinx, though the history was negative, was proved by an examination of pus removed from the urethra after death.

Chloroform versus Ether.

This is a question which has agitated German surgeons and gynecologists considerably of late.

Mikulicz (*Berliner klin. Wochenschrift*, 1894, No. 46) reports several accidents following ether-anæsthesia, which have caused him to abandon it in favor of chloroform. He reports three cases of asphyxia, four of acute bronchitis, two of pulmonary œdema and pneumonia, and two of collapse. He believes that the relative safety of ether has been exaggerated, since too little stress has been laid upon its bad after-effects. In using chloroform, which he regards as especially useful in gynecology, he calls attention to the fact that it is not well borne by septic patients.

Schönherr (Inaugural Dissertation: abstract in *Centralblatt für Gynäkologie*, 1895, No. 1), from a study of a large number of cases in Sänger's clinic, pronounces in favor of ether, especially in all prolonged operations.

Kreeke (*Münchener med. Wochenschrift*, 1894, Nos. 39 to 41) prefers bromide of ethyl for short operations and ether for longer ones, rejecting chloroform except in cases of pulmonary trouble and in operations about the face and neck.

The Condition of the Kidneys in Uretero-abdominal Fistula.

Neumann (*Archiv für Gynäkologie*, Band xlvii. Heft 3) infers from his experimental studies of this subject that after extirpation of the kidney on the affected side it is highly important to watch the urine carefully in order to detect evidences of beginning nephritis in the remaining organ. It is advisable to keep the patient on an exclusive milk-diet until it is certain that the organ is fully able to perform the extra work necessitated by a general diet.

Abdominal Hysterectomy in Septic Affections of the Uterus and Adnexa.

Delagénière (reprint from *Archives provinciales de Chirurgie*) favors abdominal rather than vaginal hysterectomy in such cases for these reasons: 1. The possibility of doing a conservative operation after opening the abdomen. 2. Greater ease in removing diseased organs under direct control of the eye. 3. Absolute prevention of hemorrhage and the possibility of covering denuded surfaces with peritoneum. 4. Easier separation of intestinal adhesions and less danger of tearing the gut. 5. The use of ligatures instead of forceps, thus giving less pain to the patient.

Surgical Treatment of Uterine Fibroids.

Homans (*Boston Med. and Surg. Journ.*, 1895. No. 10) reports twenty-six operations in private practice, with one death. He ligates the broad ligaments and dissects off an anterior and posterior peritoneal flap in the usual way, and performs supra-vaginal amputation of the uterus. After cauterizing the cervical canal he closes it by suturing the raw edges of the stump, being careful not to enter the canal, then unites the peritoneal flaps over it with fine silk, being afraid to use catgut for this purpose.

PÆDIATRICS.

UNDER THE CHARGE OF

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ASSISTED BY

THOMPSON S. WESTCOTT, M.D.,
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STRANGULATED HERNIA IN A CHILD.

CHARLES F. JUDSON (*Archives of Pediatrics*, December, 1894) reports a case of strangulated hernia in a male child four years old, occurring in the service of Dr. Samuel Ashhurst, at the Children's Hospital of Philadelphia. Previously to the onset of the trouble he had been a healthy child, never sick except for a mild attack of measles, and his mother had never observed any swelling in the groin. Two days before admission to the hospital he had become wedged between the seat and arms of a chair, and had to be extricated forcibly. On the following day the bowels were constipated, urine scanty, severe pain in the abdomen was complained of, and vomiting began. These symptoms continued the next day, when the matter vomited became sour-smelling and bilious in character. On admission to the hospital there was marked swelling in the left inguinal region over the middle of Poupart's ligament. Taxis and ice having failed, Dr. Ashhurst operated and readily reduced and returned the protruded gut. The peculiarity in the case was the absence of anything like a thick sac. The protrusion having been so recent, the hernia had only started down in the course of the cord, the outer and inner rings being distinctly recognizable and separated from each other about three-quarters of an inch. The wound was closed with buried sutures and drained. Somewhat less than a pint of urine was voided during the night. On the second day a mild orchitis ensued, but subsided under the use of a lead-and-laudanum dressing. The catheter was required for several days. Convalescence was rapid, and the boy was discharged at the end of six weeks, wearing a truss. Six months later, when last seen, he had experienced no further trouble.

A CASE OF CONGENITAL SARCOMA OF THE SMALL INTESTINE.

STERN (*Berliner klinische Wochenschrift*, 1894, No. 35, p. 802) records an extremely rare, and possibly unique, case of primary sarcoma of the small intestine in a newborn baby. The child was born, after an easy labor, of a healthy primipara of twenty-three years, and presented no apparent abnormality. Shortly after birth, however, it was noticed that no meconium was passed, and bile-stained matter was vomited. The belly was swollen but soft, and revealed nothing to palpation. There was no abnormality of the

rectum or anus. On the following day the child vomited thrice spontaneously, and also after every ingestion of nourishment. The bowels were still unmoved, though the urine was passed freely. Vomiting continued, and the bowels remained locked, except for a small constipated movement produced by glycerin injection. Death ensued on the fourth day.

The autopsy revealed a tumor of the small intestine, situated 132 cm. from its beginning, and occupying transversely 4 to 5 cm. of its lumen. This growth was a broad sessile tumor rising 1½ cm. above the general surface of the mucous membrane, and involved all the coats except the peritoneal, consisting of a very marked, round-celled infiltration with great overgrowth of the capillary vessels in the outermost zone, the whole corresponding closely to Kolaczek's picture of angio-sarcoma. All the other organs were healthy, and no metastases were found.

The author calls attention to the great rarity of primary sarcoma of the intestine at any age, Madelung, in a paper in the *Centralblatt für Chirurgie*, 1892, No. 30, having collected but fourteen undoubted cases, and of this number only five, including the case just reported, have occurred in children under ten years of age.

The case is also of interest in that it demonstrates the possibility of another causation for ileus in the newborn, and that is, a tumor of the intestine itself.

In eight of the reported cases collected by Madelung Baltzer (*Archiv f. klin. Chirurgie*, Bd. 44) found that in three the mucosa and in five the submucosa of the intestine were the starting-points of the growth. A case recorded by Lehmann, in his inaugural dissertation (Würzburg, 1888), was classed as an "interfascicular endothelioma" arising from the lymph-vessels of the submucosa. The author's case, unfortunately, could not be properly studied from this point of view, owing to the method of the preparation of the specimen, but hyaline degeneration of the vessels and of the connective-tissue stroma was made out; and this, according to Lubasoch, is almost constantly observed in angio-sarcoma and endothelioma.

Cardiac Irregularity in Childhood.

Heubner (*Zeitschrift f. klin. Medicin*, Bd. xxvi. H. 5 u. 6) contributes an important study under this heading. He excludes cases of arhythmia due to tubercular meningitis and to pronounced cardiac inflammations, and distinguishes eight classes: 1. The simplest case is that of irregularity after poisoning. An instance is quoted of a child who had eaten stramonium-seeds; on the third day there was decided irregularity of the pulse, which disappeared on convalescence. Large doses of digitalis and of opium have been noticed to produce the same effect. 2. Closely allied are cases of disturbed rhythm from digestive troubles. Recent investigations suggest in many severe forms of indigestion the circulation of some poison in the blood —a form of auto-intoxication. He gives an example in a child of six years suffering from gastric disorder, who began to show cerebral symptoms, vomiting, etc. There were rise of temperature, very irregular, intermitting pulse, retraction of the head, and drowsiness. It was regarded as a case of auto-intoxication, and this was confirmed by the favorable issue and the appearance of acetone in large amounts in the urine. Another case showed a slow,

unequal heart-beat. 3. Cardiac irregularity may be met with in abdominal affections where no grounds exist for considering it due to poisoning. A case of appendicitis, in a girl of eight years, is quoted; decided intermittency of pulse was present, and also on a second occasion after an attack of indigestion. 4. Arhythmia in the course of infectious diseases is divided by Heubner into two groups—(*a*) that during the development and height of the disease; (*b*) that observed during convalescence. The first group is much the rarer. Many observers mention it in typhoid fever, but Heubner has had no experience of it. The second group is well recognized. In diphtheria it is often present, and also not infrequently in scarlet fever, of which several instances are quoted; measles and croupous pneumonia frequently give rise to it, and sometimes it has been observed by the author late in typhoid fever. 5. In anæmic and nervous children irregularity is frequently noted, and is apt to lead to a false diagnosis: in rhachitic, feeble children, from two to four years old, such irregularity is too readily accepted as an indication of the imminence of tubercular meningitis. 6. Intestinal parasites are said to cause irregularity of pulse, but no evidence of it has occurred in the author's experience. 7. Under certain physiological conditions irregularity may be observed, as in emotional states, sometimes during sleep, and occasionally following a warm bath, with subsequent cooling. 8. Da Costa has described a disturbance of rhythm which appears to be the only element of disease, the child seeming otherwise well, and all the other causes being satisfactorily excluded. During febrile attacks the irregularity disappeared.

Discussing the mechanism of irregularity under these various conditions, Heubner refers to nerve-influence—a disturbance of the regulating nerves of the heart. This is the explanation accepted for tubercular meningitis, increased intracranial pressure affecting the centres in the medulla. Irritation of peripheral nerves, such as the splanchnic depressor, disturbs rhythm, and would account for a continuance of such a symptom with nausea and vomiting. When due to poisoning the explanation is more difficult; but it is probably a result of action upon the nerve-centres or the cardiac muscle. The cause of arhythmia in anæmic, rapidly growing children is involved in doubt, though the suggestion of a relatively small arterial system is founded on experimental evidence.

The treatment of cardiac irregularity in children requires a careful consideration of causes. If reflex, the irritant should be removed. When due to poison, the stomach and intestines should be emptied and a plentiful supply of water should be given to cleanse out the system. The idiopathic form requires moderate movement, light gymnastics, frequent small meals, and sea-baths. The anæmic variety demands suitable diet, hygiene, and medical treatment.

Some Peculiarities of Grippe-pneumonia in Children.

Clémente Ferreira, of Rio de Janeiro (*Revue Mensuelle des Maladies de l'Enfance*, March, 1895, p. 105) gives a striking picture of the peculiarities of broncho-pneumonia in children observed in connection with epidemic influenza. In numerous cases, together with dyspnœa, supra- and infra-sternal

depression, subcrepitant râles, and blowing breathing, the temperature has not exceeded 99.6° F., or even 98.6° F. In a process habitually attended with high fever such a depression of temperature must be accounted for by a paralysis of the thermogenic centres produced by the influenza-poison. In such cases the low temperature may occasion unfortunate errors of prognosis, unless the physical signs, the dyspnœa, and the progressive adynamia be taken into account.

Another peculiarity is the early tendency to bronchoplegia and pulmonary collapse due to the general adynamia which is the keynote of influenzal infection. This collapse is indicated by feebleness and even suppression of respiratory sounds and by the absence of cough, an unfortunate condition that can do much in giving the mother a false sense of security at a time when the organic condition is extremely grave. Infrequency of cough is the result of diminished sensibility of the bronchial mucous membrane, and constitutes in these conditions a phenomenon of bad omen. Stagnation of the bronchial secretions thus acts mechanically in diminishing the field of blood-aëration and aggravating the dyspnœa; and, on the other hand, the toxins existing in these products are reabsorbed and provoke marked symptoms of general intoxication.

A third peculiarity is the extraordinary slowness in the evolution of these catarrhal processes in the child. The steps of evolution of the morbid process do not develop as ordinarily. Secretion is long delayed, and for an unusual length of time is stringy, dense, adherent, resembling white of egg, difficult to bring up despite the use of the ordinary relaxing expectorants.

In this connection the author strongly protests against the untimely use of emetics and antimonials. In the broncho-pulmonary determinations of influenza in children, as well as in all infectious broncho-pneumonias, one frequently observes decided aggravation of the symptoms after the use of emetics, which are too often administered in excess. In these cases vomiting is effected with difficulty on account of the great organic asthenia. The energy for the production of active reflexes is here wanting, and, as a result, the emetic is repeated again and again, with only an aggravation of the phenomena of the general adynamia and pulmonary collapse. The indication here is for the early employment of expectorants and excitants of the muscular structure of the bronchi; preparations of ammonia, benzoic acid, tincture of phosphorus, and also injections of camphorated oil, caffeine, and alcoholics in high dose and concentrated solutions. This treatment should be carried out from the beginning with energy, regularity, and persistency.

Lesions of the Right Heart in Pertussis.

Silbermann (*Archiv f. Kinderheilkunde*, 1894, Bd. xviii. S. 24) bases a suggestive study under this caption upon five observations of pertussis complicated in the third or fourth week with albuminuria, broncho-pneumonia, and dilatation of the right heart. The cardiac lesion is attributed to two factors: (*a*) the extended, diffuse, capillary bronchitis; and (*b*) the forced expirations which call into play all the respiratory muscles, and are interrupted only from time to time by short inspirations. The bronchitis of the finer tubes with foci of broncho-pneumonia produces a venous stasis in the

pulmonary capillaries, and this in turn an overloading of the right heart and the general venous system. Stasis alone, however, cannot produce dilatation of the right heart, but requires the co-operation of the forced, prolonged, apnœic expirations of the kink. At each paroxysm, when the child becomes apnœic, the glottis closes, intrapulmonary pressure increases with the narrowing of its capillary circulation, and as a result the right ventricle yields gradually to the strain and dilates.

One of the five children died. At the autopsy the walls of the right heart were found to be thinned and its cavity considerably dilated. The myocardium and orifices and even the valves were anatomically normal; the tricuspid alone was mechanically insufficient by reason of the dilatation of the right ventricle. This paper thus emphasizes anew the necessity of watching the heart during the whole course of pertussis, as pointed out several years ago by Koplik, and of supporting its strength by the early administration of digitalis as soon as signs of venous engorgement become noticeable.

Hemorrhagic Nephritis in Diphtheria Treated by Antitoxin.

Treymann (*Deutsche medicinische Wochenschrift*, December 20, 1894) reports a case of this unusual complication appearing in a child of three years after the use of Behring's serum. Owing to the unfavorable condition of the child in the early days of the disease large doses of the antitoxin were employed. On the fifteenth day a measles-like eruption appeared, with high temperature, and albumin, blood, and casts were found in the urine. Four days later anuria, lasting forty-eight hours, was observed, with œdema of the eyelids. As the nephritis appeared during convalescence and shortly after the last dose of serum, disappearing in an unusually short time, the author feels justified in attributing it to the serum.

In the same journal J. Schwalbe records a similar complication occurring in a boy of ten and one-half years, suffering from diphtheritic angina and croup, in which tracheotomy was required. This case occurred in 1890, before serum therapy was in vogue, and, as the author remarks, offers a parallel case to the one just recorded. The nephritis appeared on the twenty-fifth day, during convalescence, with the same clinical picture as recorded in Treymann's case, and had nearly disappeared in seven days, although albumin was still found until the twenty-eighth day, while Treymann's case was free from it after the fifth day.

The author remarks that blood very rarely appears in the urine in diphtheria, thus contrasting very strongly with the condition in scarlet fever. He justly maintains that the same caution should be exercised in attributing unfavorable results to the serum treatment as must be taken in accrediting favorable results to it.

Renal Complications in Varicella.

That varicella may be followed or attended by severe or even fatal nephritis is an observation of quite recent date, Henoch, in 1884, being probably the first author to call attention to this danger in the disease (*Berlin. klin. Wochenschrift*, 1884, No. 2). He reported four cases, one of which terminated

fatally. Since then about twenty-five similar cases have been recorded by various observers, among whom are Clausen, Hoffmann, Rasch, Semtschenko, Rachel, Högyes, Newski, Hagenbach, Demme, and Cassel. The latest report of cases comes from CASSEL (*Archiv für Kinderheilkunde*, Bd. xvii. S. 371), who encountered six cases of renal disease in twelve patients seen during an epidemic of varicella in Berlin in the early part of 1894. The severity of the complication varied from albuminuria to actual nephritis, the earliest observation dating from the fourth or fifth day after the stage of desiccation had begun. Three of the cases were fatal, two of these not directly from nephritis, for one died of catarrhal pneumonia and the other of gangrene and lobar pneumonia, though it is certain that the renal complication largely determined the fatal result. The third case, a child ten months old, died from acute nephritis on the twelfth day. Three other fatal cases of post-varicellous nephritis have been recorded by Högyes, Henoch, and Hagenbach. The two latter observers speak of acute parenchymatous nephritis, whilst Högyes states that in his case the convoluted tubules and loops of Henle were alone affected. The obvious lesson of these cases is that the urine, in a case of varicella, should be as carefully watched as in a case of scarlatina.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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ALBUMINURIA.

Three questions relative to albuminuria are discussed by PROFESSOR OTT, in a paper in the *Deutsches Archiv f. klin. Med.*, 1894, liii., 604—*i. e.*: 1. The relative value of the various tests for albumin in the urine; 2. Alimentary albuminuria; and 3. Intermittent albuminuria.

Sixteen different tests for albumin were carefully compared in examinations of forty-eight specimens of urine from various sources, thirty of which contained more or less albumin. Twelve of the specimens contained so small an amount of albumin that the ordinary boiling and nitric acid test gave no indication of its presence. These were, of course, particularly well adapted to tests of the delicacy and reliability of some of the more recently advocated reactions. On the whole, Spiegler's reagent was found to give the most delicate reaction, though the sulphosalicylic acid test and Millard's and Tanret's tests were found to be very delicate and reliable. Because of its delicacy, portability, and ease of application, Ott is of the opinion that the sulphosalicylic acid (also called salicyl-sulphonic acid) test is destined to become very popular with clinicians. It may be easily employed at the bedside,

requiring only a test-tube and a few crystals of the reagent. These latter are placed in the test-tube, and urine, which should be filtered beforehand unless perfectly clear, is added. Sulphosalicylic acid is very readily soluble in water. As it dissolves a distinct cloudiness is caused if albumin is present. By this test it is also possible to differentiate the ordinary albumin (albumin and globulin) commonly present in albuminous urine from the albumoses and peptones occasionally met with, since the precipitate of the latter disappears on heating to the boiling-point, coming down again on cooling.[1]

Ott has no doubt of the occurrence of an alimentary albuminuria dependent upon the ingestion of proteids in excess, particularly when uncooked. This opinion is based upon the results in fourteen cases experimented upon, in all of which traces of albumin were found in the urine in from four to six hours after the ingestion of uncooked egg-albumin. The condition is, however, but transitory, and would appear to be of no importance in the production of disease of the kidney, and to have no diagnostic significance as regards nephritis.

Under the heading "intermittent albuminuria," Ott includes those cases which have been designated "cyclic" by Pavy, "functional" by Raabe, and "transitory" by Kinnicutt. This condition is believed to depend always upon inflammatory change in the kidney, often very slight in extent. The quantity of albumin in the urine is extremely variable, and would seem to be governed by no rule. It is not dependent on the character of the food as is the alimentary albuminuria, and is increased with great regularity by exercise, often almost entirely disappearing as the result of rest in bed. Usually casts and renal epithelium are present in the urine at some time in the course of the disease, though they may appear and disappear most irregularly.

The Relation of the Tonsils to Tubercular Glands of the Neck.

With the growth of our knowledge of the paths of entry of the tubercle bacilli into the body, and of the manner of their dissemination in the body, there has developed the belief that tuberculosis of the lymphatic glands of the neck, so often met with in young persons as the only discoverable lesion of tuberculosis, must be attributed to entrance of the bacilli into the body through the oral or pharyngeal mucous membranes. Proof of this has, however, been lacking, and experimental attempts to induce tuberculosis of the glands in question by introduction of tubercle bacilli into the tonsils have failed.

It is with much interest, then, that we read the observations of Krückmann (*Virchow's Archiv*, 1894, cxxxviii. 534), made in the course of post-mortem examinations upon the bodies of twenty-five tubercular patients at the Pathological Institute in Rostock. In twelve of the cases it was possible to demonstrate tuberculosis of the tonsils, and in every case in which the lymph-glands of the neck were affected. In two of the cases there seemed to be no question that the lesion in the tonsils was the primary tubercular lesion of the body. In sixty per cent. of the cases of pulmonary tuberculosis similar

[1] For further details of this useful test the reader is referred to an article by J. A. Macwilliam in the British Medical Journal for April, 1891, No. 1581.

inflammation of the tonsils was present, in many of these cases undoubtedly depending on absorption of the infectious material from the sputum. Krückmann expresses the belief that tubercular changes in the tonsils would have been more frequently found if serial sections of the tonsils had been made in all cases. The importance of the tonsils as a point of entrance of the tubercular virus would appear to be very clearly demonstrated. This is quite reasonable, for there can be little doubt that throughout the alimentary tract it is the lymphatic structures which are first involved when the infectious material finds entrance from the alimentary canal, and, in the mouth, the tonsils are the most important of these structures.

As a practical deduction from all this Krückmann advocates extirpation of fissured and hypertrophied tonsils, particularly in persons having any inherited predisposition to tuberculosis or whose cervical glands are enlarged, and he would have the surgeon operating for tubercular glands at the same time carefully examine the tonsils for any evidence of inflammatory change.

Streptococcus Infection from Mother to Fœtus.

Direct infection of the fœtus by the mother has been clearly shown in a number of diseases, but, so far as we know, there has been no record of such infection with the pyogenic bacteria until the recent publication of a case of that nature by Ricker (*Centralbl. f. Allg. Path. u. Path. Anat.*, 1895, vi., No. 2).

A woman, twenty-seven years of age, died in the sixth month of pregnancy of a disease diagnosticated diphtheria, but which was later shown to have been caused, in all probability, by the streptococcus pyogenes, as the most careful bacteriological examination failed to reveal the presence of any other germ. The streptococcus was also obtained in pure culture from the placenta and from the liver of the fœtus. No lesion was found in the fœtus.

A second similar case, which had occurred some time previously, is recalled by Ricker, in which the streptococcus was found in the blood of the umbilical veins of a stillborn child whose mother died shortly afterward from the effects of a spreading phlegmon of the arm which was present at the time of the birth. In neither of these cases was any lesion of the placenta discoverable.

The significance of these cases as bearing upon septicæmia neonatorum and upon puerperal septicæmia is evident.

The Contagiousness of Tuberculosis in Young Children.

A case of tuberculosis in an infant, illustrative of the contagiousness of tuberculosis and of the peculiar susceptibility to it of young children, is reported by Wassermann (*Zeitschr. f. Hygiene u. Infectionskrankeiten*, 1894, xvii. p. 343).

The child was born of a healthy mother in the Charité, was apparently healthy in every particular, and after nine days the mother and child were discharged. For a week after leaving the hospital they visited a brother-in-law of the mother, who had phthisis and was accustomed to expectorate into a box filled with sand. The mother then found lodgings of her own. Soon after leaving her brother-in-law's she noticed that the baby coughed and was emaciating, and took it to the Institute for Infectious Diseases.

Four weeks later it died. Autopsy showed a number of diffuse tubercular areas in the upper lobe of the left lung, and miliary tubercles in the other lung, in the liver, and in the kidneys. The bronchial lymph-nodes, while hyperplastic, were not cheesy. There could be little doubt that the infection had occurred through inhalation of tubercle bacilli which had been thrown off by the phthisical uncle. Investigation showed that both parents were healthy, and no ground for supposing any inherited predisposition in the child to tuberculosis could be found. During the nine days after its birth, while it was still in the Charité, there was nobody in the ward who had cough and expectoration. The tubercular nature of the uncle's malady was proved by examination of his sputum. And, finally, the apartment occupied by the mother after leaving her brother-in-law's had never had an occupant afflicted with phthisis.

Wassermann believes that a similar definite source of infection might be found in almost all cases of tuberculosis in young children if only carefully sought for.

We have recently received from Messrs. Macmillan & Co. a small *Manual of Practical Morbid Anatomy*, by Rolleston and Kanthack, recently issued as one of the volumes of the Biological Series of the Natural Science Manuals. It is a handy guide to the post-mortem room, its object being to indicate a systematic and convenient method of performing the autopsy so that every organ may be thoroughly examined, and to point out what morbid changes to look for in each organ. We are glad to find the authors deprecating the wholesale slashing of organs at the autopsy, which too often renders valuable specimens wholly unfit either for the more careful examination which can only be made in the laboratory or for preservation as museum specimens. The cost of the book is small ($1.60), and in it will be found many valuable suggestions to those who have to conduct post-mortem examinations.

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